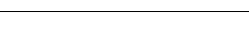
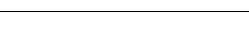
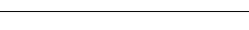
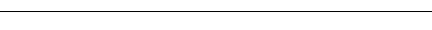


## 10 - MECHANICAL INDEX OF DRAWINGS

DRAWING NUMBER	DRAWING TITLE	DRAWING NUMBER	DRAWING TITLE
MEC-001	MECHANICAL LIST OF DRAWINGS	MEC-301	MECHANICAL ROOF - PART PLAN A
MEC-002	MECHANICAL LEGEND	MEC-302	MECHANICAL ROOF - PART PLAN B
MEC-003	MECHANICAL LEGEND II	MEC-303	MECHANICAL ROOF - PART PLAN C
MEC-100	MECHANICAL ZONE PLAN	MEC-304	MECHANICAL ROOF - PART PLAN D
MEC-200	OVERALL DUCT PLAN	MEC-305	MECHANICAL ROOF - PART PLAN E
MEC-201	MECHANICAL - PART PLAN A	MEC-306	MECHANICAL ROOF - PART PLAN F
MEC-202	MECHANICAL - PART PLAN B	MEC-307	MECHANICAL ROOF - PART PLAN G
MEC-203	MECHANICAL - PART PLAN C	MEC-500	MECHANICAL CONTROLS I
MEC-204	MECHANICAL - PART PLAN D	MEC-501	MECHANICAL CONTROLS II
MEC-205	MECHANICAL - PART PLAN E & EQUIP. PLATFORM	MEC-502	MECHANICAL CONTROLS III
MEC-206	MECHANICAL - PART PLAN F	MEC-503	MECHANICAL CONTROLS IV
MEC-207	MECHANICAL - PART PLAN G	MEC-600	MECHANICAL DETAILS I
MEC-200P	OVERALL PIPE PLAN	MEC-601	MECHANICAL DETAILS II
MEC-201P	MECHANICAL PIPE - PART PLAN A	MEC-602	MECHANICAL DETAILS III
MEC-202P	MECHANICAL PIPE - PART PLAN B	MEC-603	MECHANICAL DETAILS IV
MEC-203P	MECHANICAL PIPE - PART PLAN C	MEC-604	MECHANICAL DETAILS V
MEC-204P	MECHANICAL PIPE - PART PLAN D	MEC-605	MECHANICAL DETAILS VI
MEC-205P	MECHANICAL PIPE - PART PLAN E & EQUIP. PLATFORM	MEC-700	MECHANICAL SCHEDULES I
MEC-206P	MECHANICAL PIPE - PART PLAN F	MEC-701	MECHANICAL SCHEDULES II
MEC-207P	MECHANICAL PIPE - PART PLAN G		

				DESIGNER/DRAFTER <b>WJS</b>	 <b>STATE OF CONNECTICUT</b> <b>DEPARTMENT OF TRANSPORTATION</b> 	SIGNATURE/BLOCK:	 	PROJECT TITLE	<b>REPAIR FACILITY</b>	TOWN	<b>ROCKY HILL</b>	PROJECT NO. <b>118-0167</b>
			CHECKED BY: <b>TFC</b>	SCALE <b>NTS</b>		FILE NAME: C:\Users\HMarshall\Documents\ARCH_CT_DOT_Rocky Hill Repair Facility_Central_HMarshall.rvt		DRAWING TITLE		<b>MECHANICAL LIST OF DRAWINGS</b>		DRAWING NO. <b>MEC-001</b>
NO.	Revision Description	Date	Plotted: 10/10/2014 1:53:00 PM									SHEET NO. <b>10.01</b>

PIPING LEGEND	
	GLOBE VALVE (OUTSIDE SCREW & YOKE UNLESS SPECIFIED OTHERWISE)
	BALL VALVE
	BUTTERFLY VALVE
	HOSE END BALL VALVE WITH CAP AND CHAIN
	PLUG VALVE
	PRESSURE REDUCING VALVE
	ANGLE VALVE (SECTION VIEW)
	ANGLE VALVE (PLAN VIEW)
	GLOBE ANGLE VALVE
	CHECK VALVE (SILENT CHECK TYPE ON PUMP DISCHARGE)
	STRAINER WITH HOSE END BLOWOFF VALVE, CAP AND CHAIN
	SUCTION DIFFUSER/STRAINER (NON-REDUCING) WITH BLOWOFF
	SOLENOID VALVE
	2-WAY MODULATING PRESSURE INDEPENDENT ACV
	2-WAY AUTOMATIC CONTROL VALVE (MODULATING)
	2-WAY AUTOMATIC CONTROL VALVE (TWO POSITION)
	3-WAY AUTOMATIC CONTROL VALVE (MODULATING)
	3-WAY AUTOMATIC CONTROL VALVE (TWO POSITION)
	AUTOMATIC FLOW LIMITING VALVE (PRESSURE INDEPENDENT)
	COMBINATION FLOW METER/SHUT-OFF/BALANCING VALVE (CIRCUIT SETTER)
	TRIPLE DUTY PUMP VALVE, CHECK, BALANCING (FLOW METER), SHUT-OFF
	FLOW METER/TRANSMITTER (HOT TAP TYPE WITH VALVE)
	FLOW SWITCH
	RELIEF/SAFETY VALVE
	UNION
	BLIND FLANGE
	PIPE - CAPPED
	PRESSURE GAUGE (W/ BALL VALVE(S), SNUBBER)
	PRESSURE SWITCH
	THERMOMETER
	VACUUM BREAKER
	PRESSURE/THERMOMETER WELL
	AIR VENT - AUTOMATIC
	AIR VENT - MANUAL
	EXPANSION JOINT
	FLEXIBLE CONNECTOR
	PIPE ANCHOR
	PIPE GUIDE
	PIPE CONNECTION - TOP
	PIPE CONNECTION - BOTTOM
	PIPE - DOWN
	PIPE - UP
	REDUCER - CONCENTRIC
	REDUCER - ECCENTRIC
	CLEANOUT FOR CONDENSATE DRAIN
	DIRT LEG
	RISE (DOUBLE LINE - PLAN VIEW)
	DROP (DOUBLE LINE - PLAN VIEW)
	PIPE BREAK (DOUBLE LINE)
	PIPE BREAK (SINGLE LINE)

DUCTWORK			
SINGLE LINE		DOUBLE LINE	DOUBLE LINE
	RECTANGULAR SUPPLY DUCT W=WIDTH, D=DEPTH (INCHES UNLESS NOTED OTHERWISE) AS VIEWED		
	ROUND SUPPLY DUCT (DIA=INSIDE DIAMETER)		
	ROUND SUPPLY DUCT UP		
	ROUND SUPPLY DUCT DOWN		
	SUPPLY DUCT UP		
	SUPPLY DUCT DOWN		
	ROUND RETURN DUCT UP		
	ROUND RETURN DUCT DOWN		
	RETURN DUCT UP		
	RETURN DUCT DOWN		
	ROUND EXHAUST DUCT UP		
	ROUND EXHAUST DUCT DOWN		
	EXHAUST DUCT UP		
	EXHAUST DUCT DOWN		
	RECTANGULAR DUCT TO ROUND SUPPLY/RETURN/ EXHAUST		
	CEILING DUCT MOUNTED DIFFUSER/GRILLE		
	TAKE-OFF TO DIFFUSER/GRILLE		
	CEILING DUCT MOUNTED DIFFUSER/GRILLE		
	ACOUSTICALLY LINED DUCT		
	FLEXIBLE DUCT		
	RECTANGULAR RETURN/EXHAUST DUCT W=WIDTH, D=DEPTH (INCHES UNLESS NOTED OTHERWISE) AS VIEWED		
	ROUND RETURN/EXHAUST DUCT (DIA=INSIDE DIAMETER)		
	STANDARD RADIUS ELBOW (R = W) SUPPLY/RETURN/EXHAUST		
	FULL LENGTH SPLITTER VANES (R < W) SUPPLY/RETURN/ EXHAUST		
	SPLIT TAKE-OFF		
	RECTANGULAR WYE SUPPLY		
	HORIZONTAL OFFSET SUPPLY/RETURN/EXHAUST		
	CHANGE OF ELEVATION (R)RISE OR (D)DROP SUPPLY/RETURN/ EXHAUST		
	45° TAP TAKE-OFF		
	90° TAP TAKE-OFF		
	CONVERGE RETURN/EXHAUST W/45° TAKE-OFFS		
	SIDEWALL DUCT MOUNTED REGISTER/GRILLE		
	SUPPLY SIDEWALL LINEAR DIFFUSER (W/ SHEETMETAL PLENUM, LINING & BRANCH CONN. FOR EVERY 4' OF LINEAR.)		
	SUPPLY CEILING LINEAR DIFFUSER (W/SHEETMETAL PLENUM, LINING & BRANCH CONN. FOR EVERY 4' OF LINEAR.)		
	OPEN END DUCT W/ 1/2"x1/2" WMS		

DUCTWORK	
	AIR FLOW MONITORING STATION
	AUTOMATIC CONTROL DAMPER W/ ACCESS DOOR
	SLIDE GATE DAMPER
	MANUAL VOLUME DAMPER
	SELF-CLOSING FIRE DAMPER W/ ACCESS DOOR
	AUTOMATIC SMOKE DAMPER W/ ACCESS DOOR
	COMBINATION SMOKE/FIRE DAMPER W/ ACCESS DOOR
	DUCT MOUNTED SMOKE DETECTOR
	BACKDRAFT DAMPER
	STANDARD 4-WAY BLOW SUPPLY DIFFUSER
	3-WAY BLOW SUPPLY DIFFUSER
	2-WAY BLOW SUPPLY DIFFUSER
	ONE-WAY BLOW SUPPLY DIFFUSER
	RETURN/EXHAUST GRILLE OR REGISTER
	ROOF EXHAUST FAN SHOWN ON ROOF
	ROOF EXHAUST FAN SHOWN ON FLOORPLAN
	RETURN OR EXHAUST AIR FLOW
	SUPPLY AIR FLOW

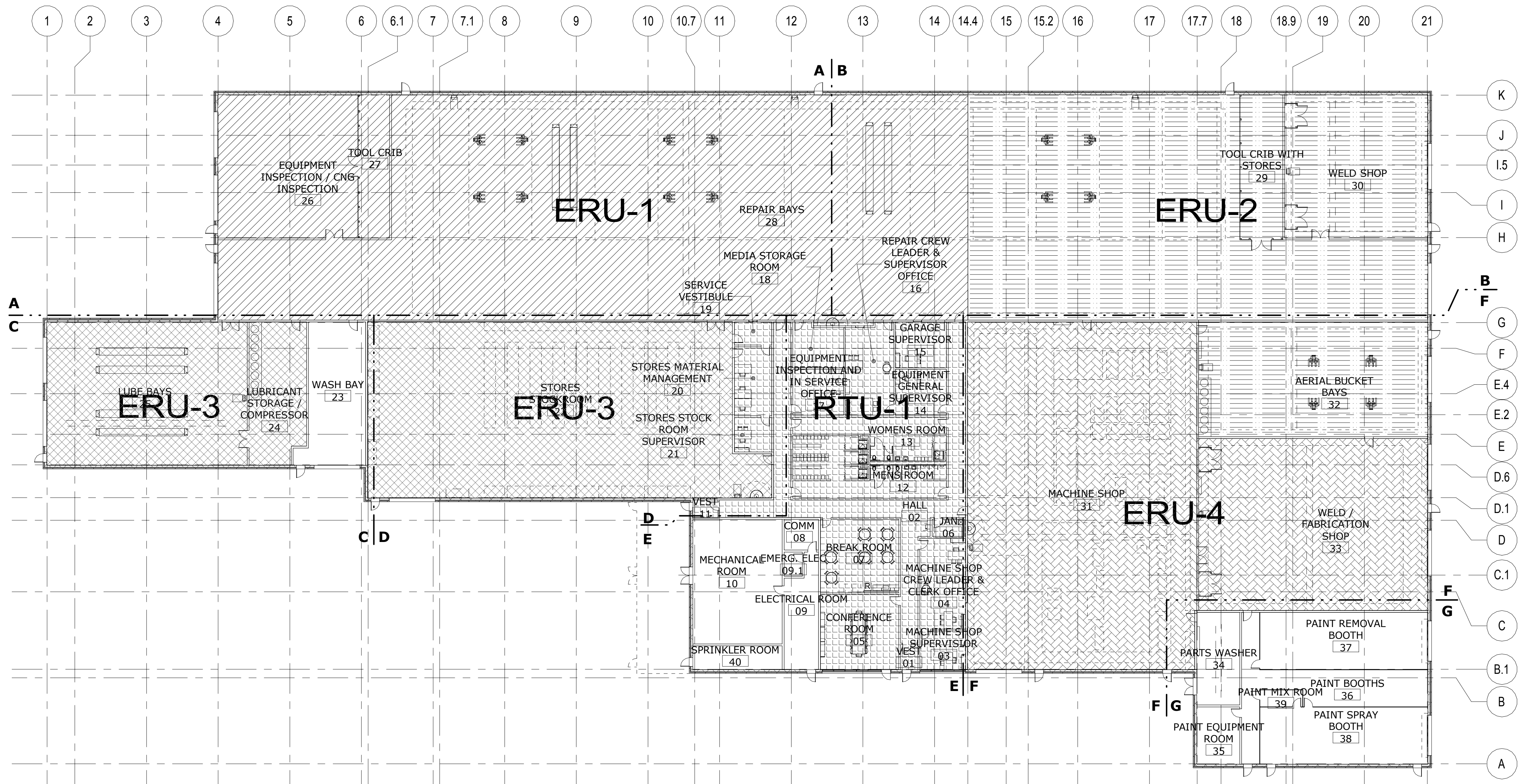
PIPING ABBREVIATIONS	
	HWR HOT WATER RETURN
	HWS HOT WATER SUPPLY
	MU MAKE-UP WATER
	PC PUMPED CONDENSATE
	V VENT

				DESIGNER/DRAFTER <b>WJS</b>	 <b>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</b> <small>File Name: MPPP_CTDOT_Rocky Hill Repair Facility_Central.rvt</small>	SIGNATURE/BLOCK: 	PROJECT TITLE <b>REPAIR FACILITY</b>	TOWN <b>ROCKY HILL</b>	PROJECT NO. <b>118-0167</b>
				CHECKED BY: <b>TFC</b>				DRAWING NO. <b>MEC-002</b>	SHEET NO. <b>10.02</b>
				SCALE <b>1/8" = 1'-0"</b>				DRAWING TITLE <b>MECHANICAL LEGEND</b>	
NO.	Revision Description	Date	Plotted: 10/21/2014 3:29:22 PM						









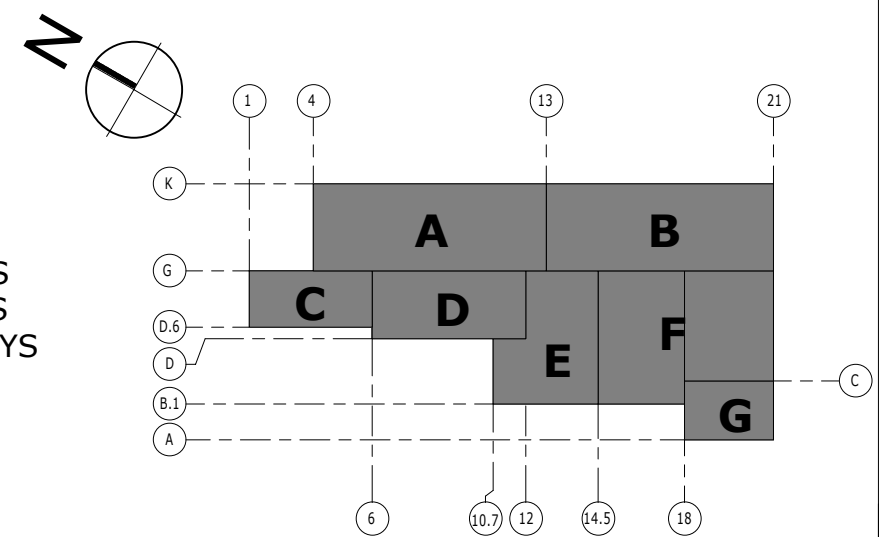
1 MECHANICAL ZONE PLAN  
SCALE: 3/64" = 1'-0"

NOTE:



- 1) ALL ELECTRICAL IN ROOM 26 & 27 SHALL BE IN COMPLIANCE WITH NFPA 52. ALL ELECTRICAL SHALL BE NFPA CLASS I DIV. 2 GROUP D.

PARTIAL PLAN LEGEND:

- A - NORTH REPAIR BAYS
- B - SOUTH REPAIR BAYS
- C - LUBE AND WASH BAYS
- D - STORES
- E - OFFICE AREA
- F - MACHINE SHOP
- G - PAINT AREA



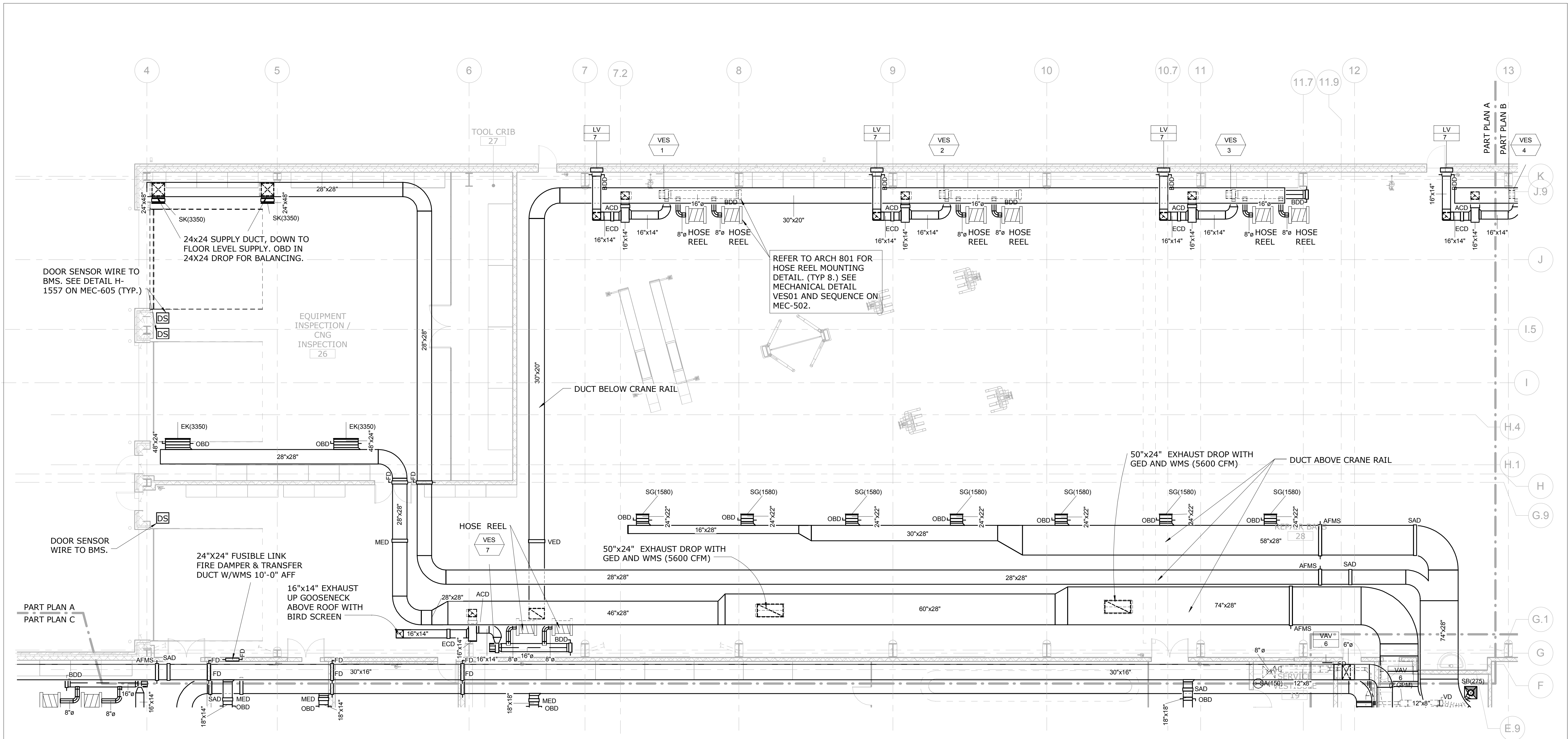
KEY PLAN

			THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.	DESIGNER/DRAFTER <b>WJS</b>	 <b>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</b>	SIGNATURE/BLOCK: 	PROJECT TITLE  <b>REPAIR FACILITY</b>	TOWN  <b>ROCKY HILL</b>	PROJECT NO. <b>118-0167</b>			
				CHECKED BY: <b>TFC</b>						DRAWING NO. <b>MEC-100</b>		
				SCALE  3/64" = 1'-0"							DRAWING TITLE  <b>MECHANICAL ZONE PLAN</b>	
				Plotted: 10/21/2014 3:29:27 PM								SHEET NO. <b>10.04</b>
NO.	Revision Description	Date		File Name: MPPE CTDOT_Rocky Hill Repair Facility_Central.rvt								



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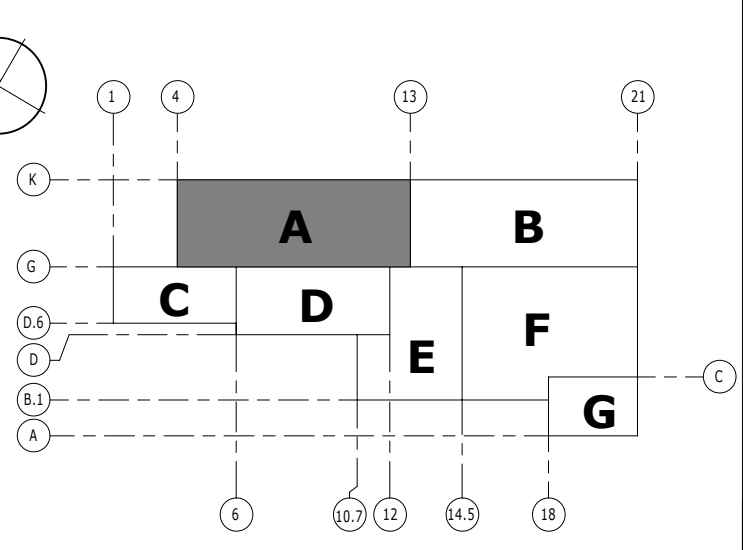


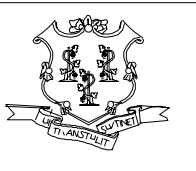
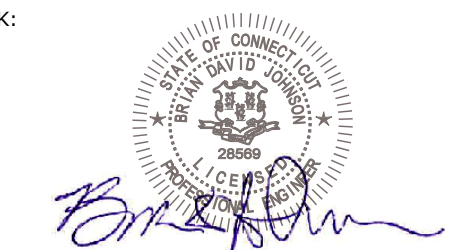


1 HVAC - DUCTWORK - PART PLAN A - NORTH REPAIR BAYS  
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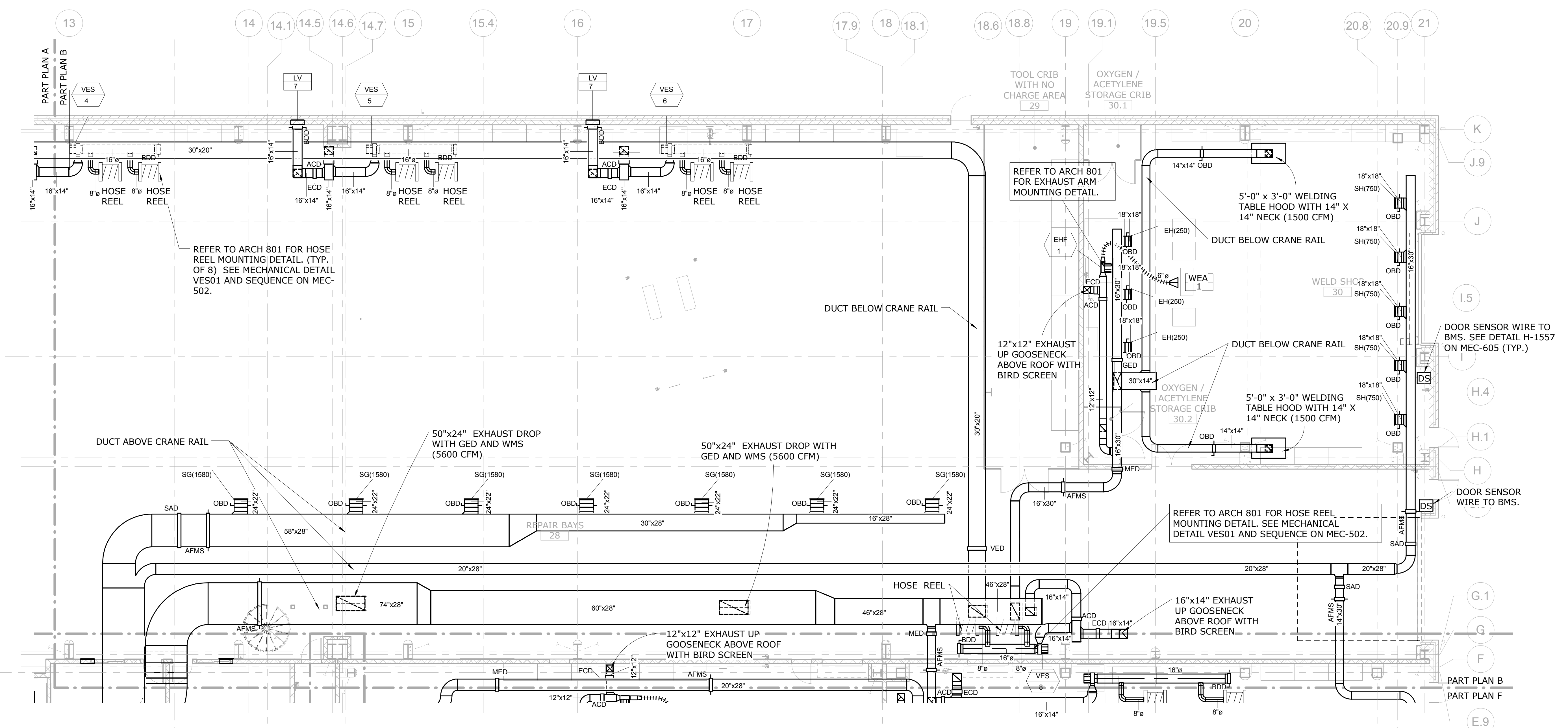
PARTIAL PLAN LEGEND:

- A - NORTH REPAIR BAYS
- B - SOUTH REPAIR BAYS
- C - LUBE AND WASH BAYS
- D - STORES
- E - OFFICE AREA
- F - MACHINE SHOP
- G - PAINT AREA



			THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.	DESIGNER/DRAFTER <b>WJS</b>		 <b>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</b>	SIGNATURE/BLOCK: 	PROJECT TITLE <b>REPAIR FACILITY</b>	TOWN <b>ROCKY HILL</b>	DRAWING TITLE <b>MECHANICAL - PART PLAN A</b>	PROJECT NO. <b>118-0167</b>							
				CHECKED BY: <b>TFC</b>														
				SCALE <b>1/8" = 1'-0"</b>														
NO.	Revision Description	Date	Plotted: 10/21/2014 3:30:32 PM	File Name: MPFP_CTDOT_Rocky Hill Repair Facility_Central.rvt														



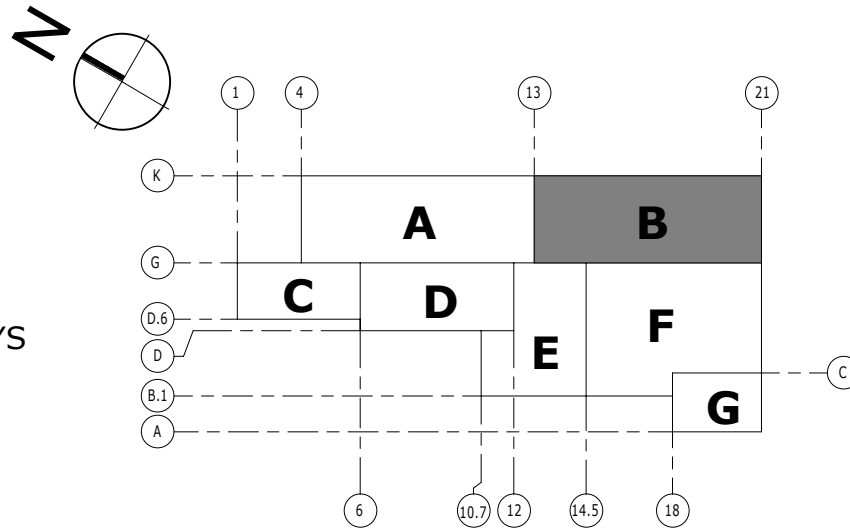


1 HVAC - DUCTWORK - PART PLAN B - SOUTH REPAIR BAYS  
SCALE: 1/8" = 1'-0"

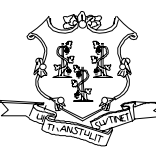

13.6

PARTIAL PLAN LEGEND:

- A - NORTH REPAIR BAYS
- B - SOUTH REPAIR BAYS
- C - LUBE AND WASH BAYS
- D - STORES
- E - OFFICE AREA
- F - MACHINE SHOP
- G - PAINT AREA



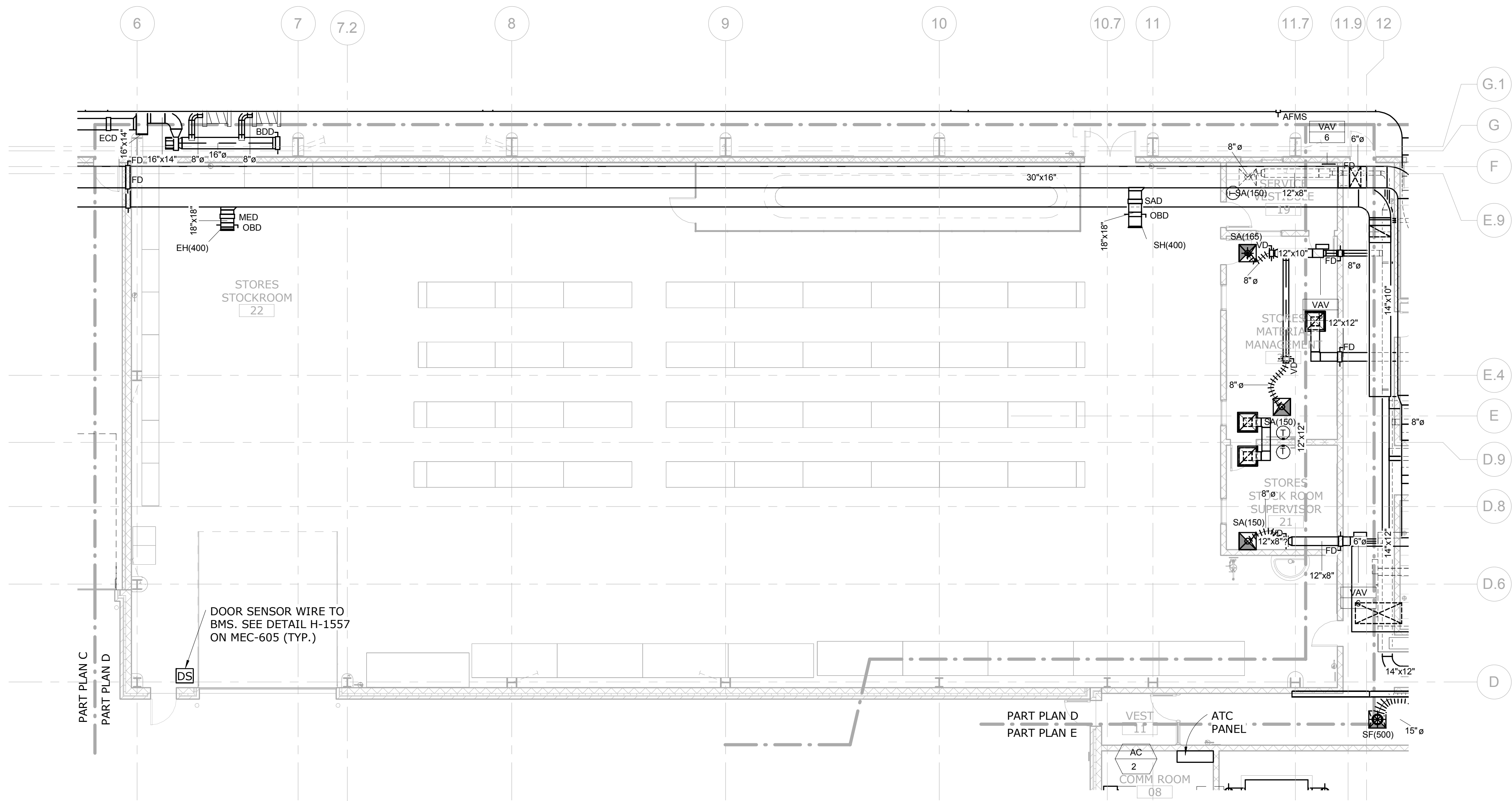
KEY PLAN

			THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.	DESIGNER/DRAFTER <b>WJS</b>		 <b>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</b>	SIGNATURE/BLOCK: 	PROJECT TITLE <b>REPAIR FACILITY</b>	TOWN <b>ROCKY HILL</b>	PROJECT NO. <b>118-0167</b>						
				CHECKED BY: <b>TFC</b>						DRAWING NO. <b>MEC-202</b>						
NO.				SCALE 1/8" = 1'-0"						SHEET NO. <b>10.07</b>						
Revision Description			Plotted: 10/21/2014 3:30:47 PM	File Name: MPFP_CTDOT_Rocky Hill Repair Facility_Central.rvt												



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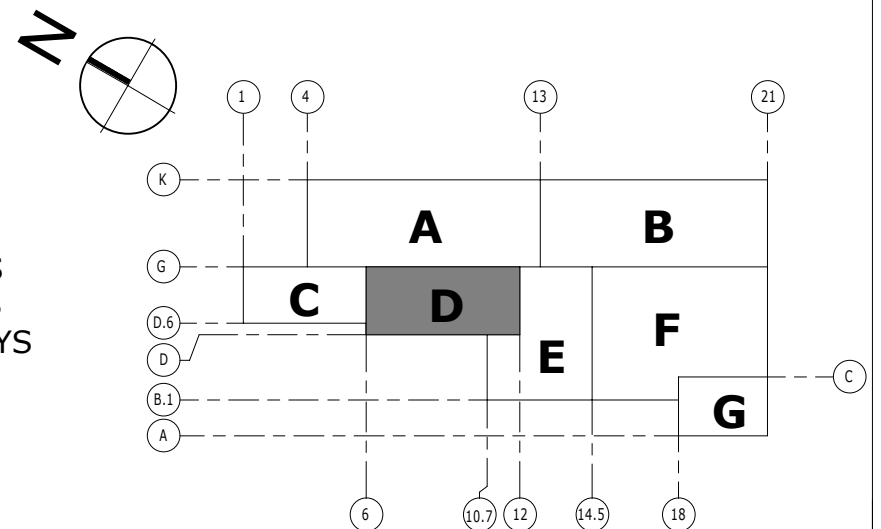


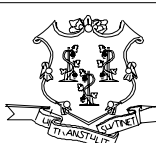
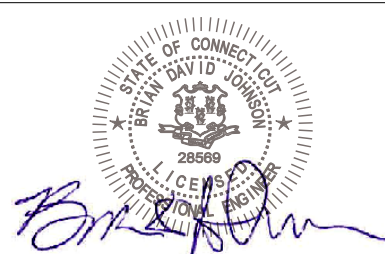


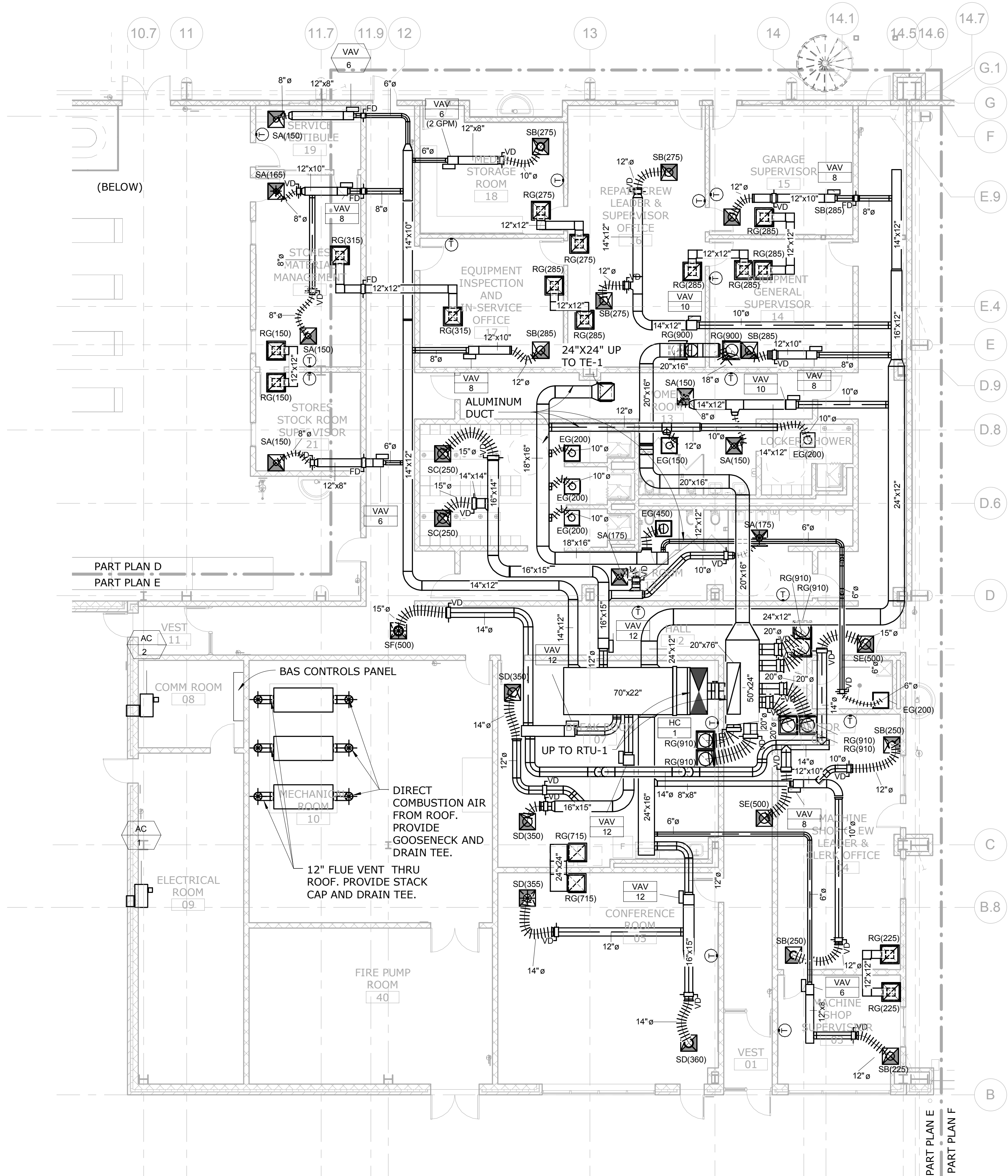
1 HVAC - DUCTWORK - PART PLAN D - STORES  
SCALE: 1/8" = 1'-0"

PARTIAL PLAN LEGEND:

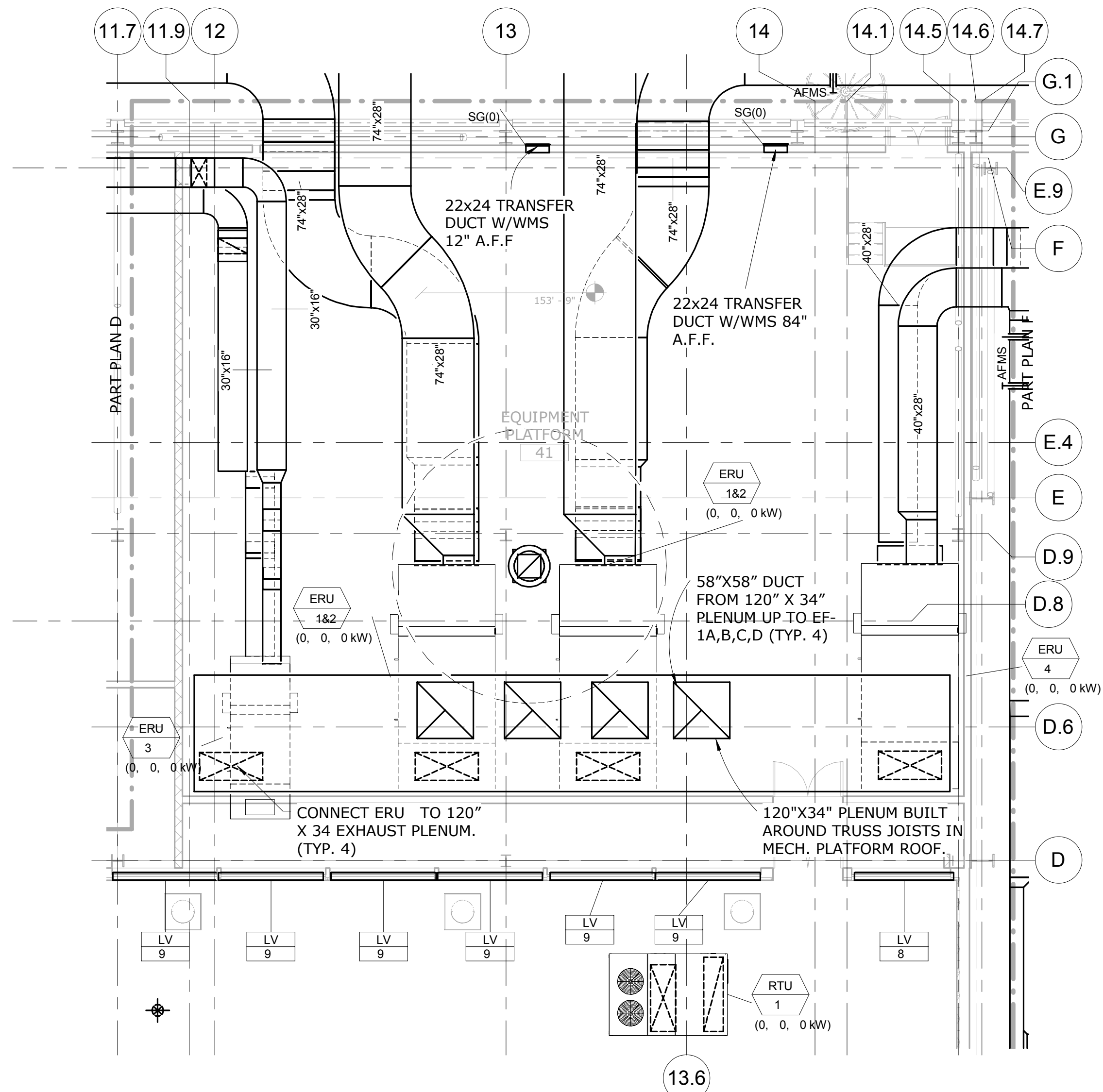
- A - NORTH REPAIR BAYS
- B - SOUTH REPAIR BAYS
- C - LUBE AND WASH BAYS
- D - STORES
- E - OFFICE AREA
- F - MACHINE SHOP
- G - PAINT AREA



			THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.	DESIGNER/DRAFTER <b>WJS</b>		 <b>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</b>  File Name: MPFP_CTDOT_Rocky Hill Repair Facility_Central.rvt	SIGNATURE/BLOCK: 	PROJECT TITLE <b>REPAIR FACILITY</b>	TOWN <b>ROCKY HILL</b>	DRAWING TITLE <b>MECHANICAL - PART PLAN D</b>	PROJECT NO. <b>118-0167</b>	
				CHECKED BY: <b>TFC</b>								
				SCALE <b>1/8" = 1'-0"</b>								
NO.	Revision Description	Date	Plotted: 10/21/2014 3:30:57 PM									



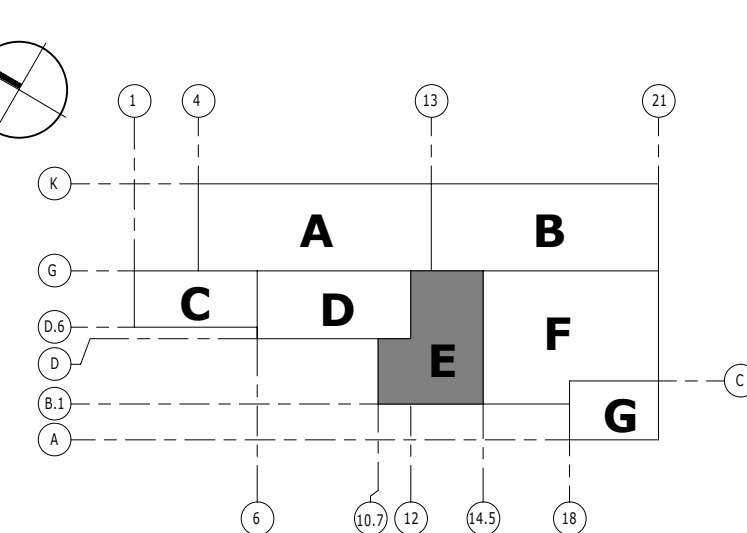
1 HVAC - DUCTWORK - PART PLAN E - OFFICE AREA  
SCALE: 1/8" = 1'-0"



2 HVAC - DUCTWORK - EQUIPMENT PLATFORM  
SCALE: 1/8" = 1'-0"

PARTIAL PLAN LEGEND:

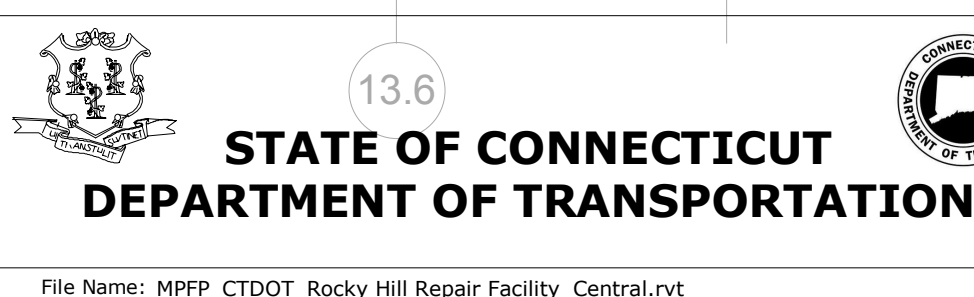
- A - NORTH REPAIR BAYS
- B - SOUTH REPAIR BAYS
- C - LUBE AND WASH BAYS
- D - STORES
- E - OFFICE AREA
- F - MACHINE SHOP
- G - PAINT AREA



KEY PLAN

NO.	Revision Description	Date	Plotted: 10/21/2014 3:31:09 PM

DESIGNER/DRAFTER  
**WJS**  
CHECKED BY:  
**TFC**  
SCALE  
1/8" = 1'-0"



SIGNATURE/BLOCK:

*Signature*

PROJECT TITLE

REPAIR FACILITY

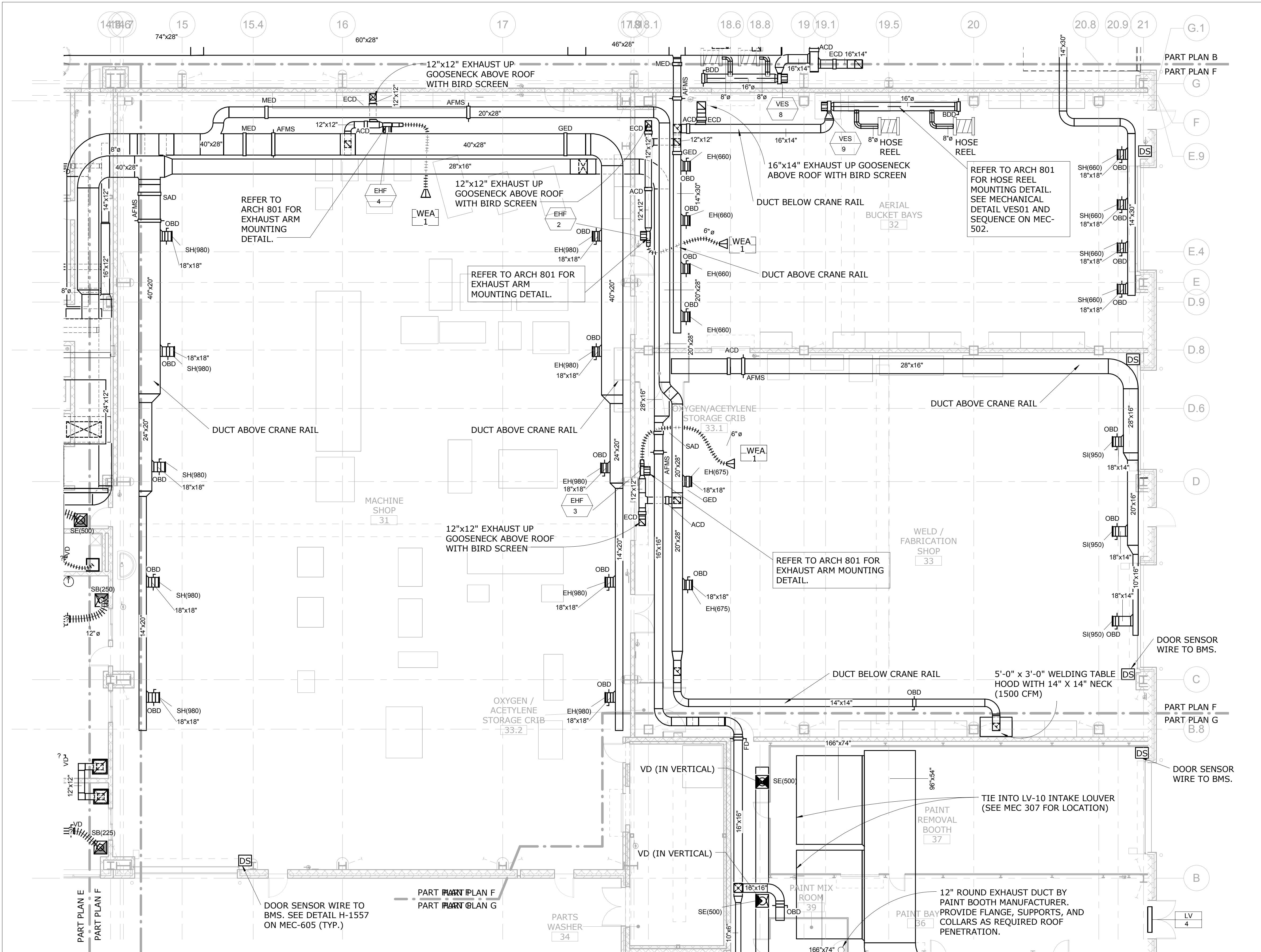
TOWN

ROCKY HILL

DRAWING TITLE  
**MECHANICAL - PART PLAN E  
& EQUIP. PLATFORM**

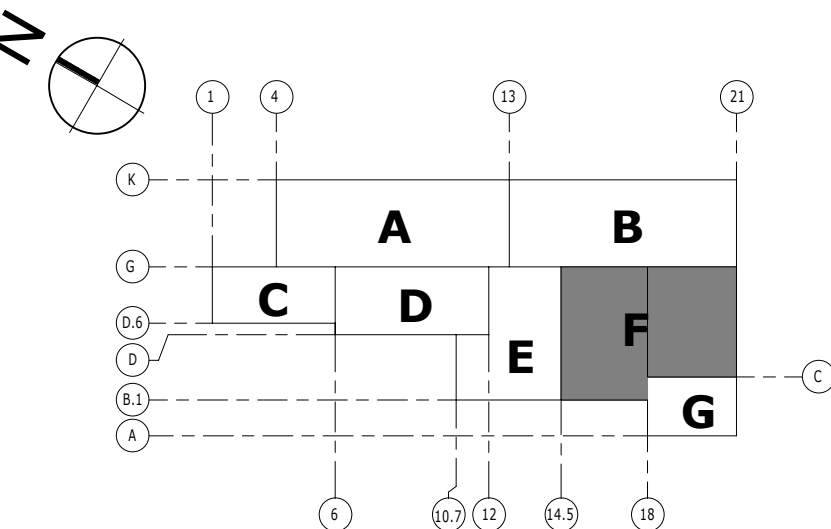
PROJECT NO.  
**118-0167**  
DRAWING NO.  
**MEC-205**  
SHEET NO.  
**10.10**





PARTIAL PLAN LEGEND:

- A - NORTH REPAIR BAYS
- B - SOUTH REPAIR BAYS
- C - LUBE AND WASH BAYS
- D - STORES
- E - OFFICE AREA
- F - MACHINE SHOP
- G - PAINT AREA



1 HVAC - DUCTWORK - PART PLAN F - MACHINE SHOP  
SCALE: 1/8" = 1'-0"

NO.	Revision Description	Date

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.

Plotted: 10/21/2014 3:31:23 PM

DESIGNER/DRAFTER  
**WJS**  
CHECKED BY:  
**TFC**  
SCALE  
1/8" = 1'-0"

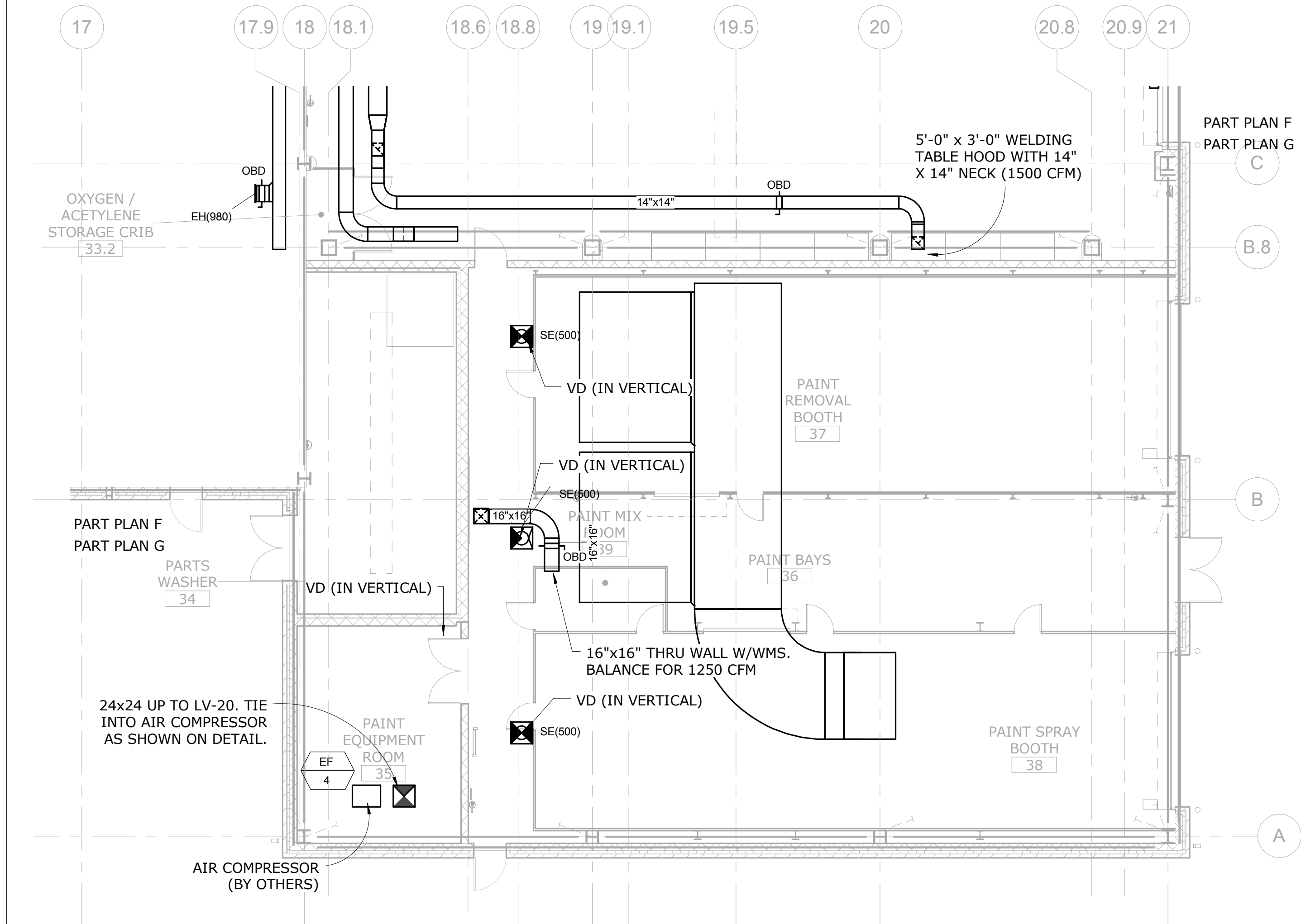


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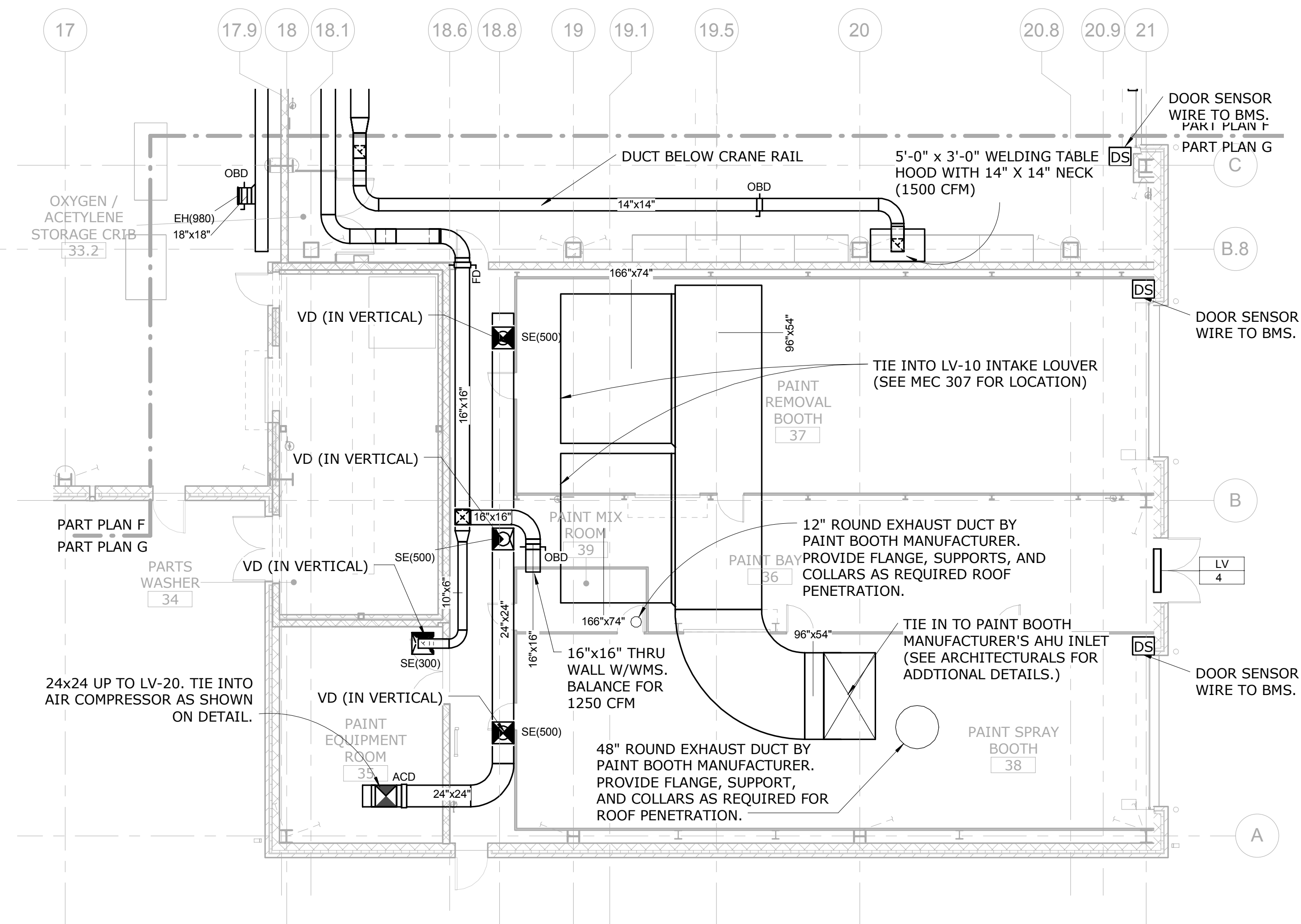
PROJECT TITLE  
**REPAIR FACILITY**

TOWN  
**ROCKY HILL**  
DRAWING TITLE  
**MECHANICAL - PART PLAN F**

PROJECT NO.  
**118-0167**  
DRAWING NO.  
**MEC-206**  
SHEET NO.  
**10.11**



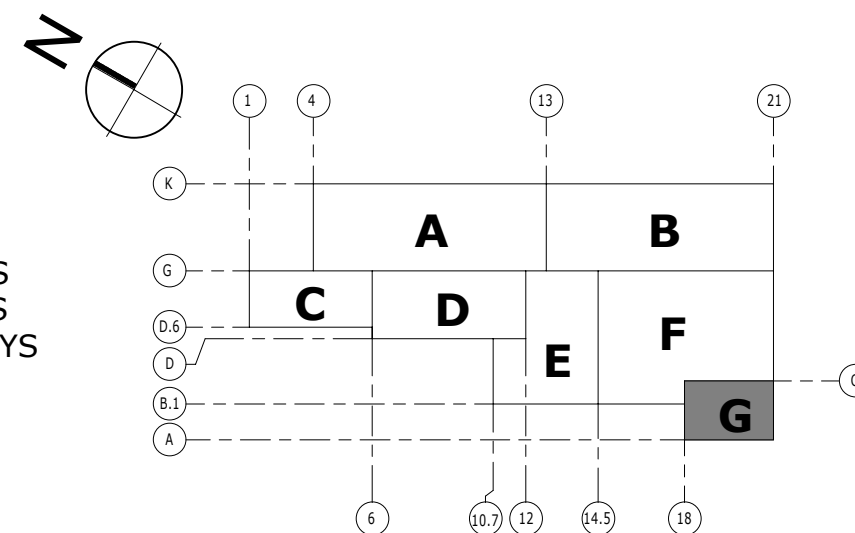
DUCTWORK - PART PLAN G - PAINT  
AREA MECHANICAL PLATFORM  
1/8" = 1'-0"





HVAC - DUCTWORK - PART PLAN G - PAINT AREA  
SCALE: 1/8" = 1'-0"

PARTIAL PLAN LEGEND:

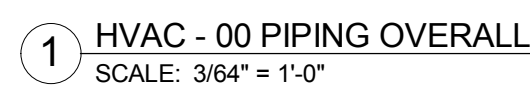
- A - NORTH REPAIR BAYS
- B - SOUTH REPAIR BAYS
- C - LUBE AND WASH BAYS
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- G - PAINT AREA



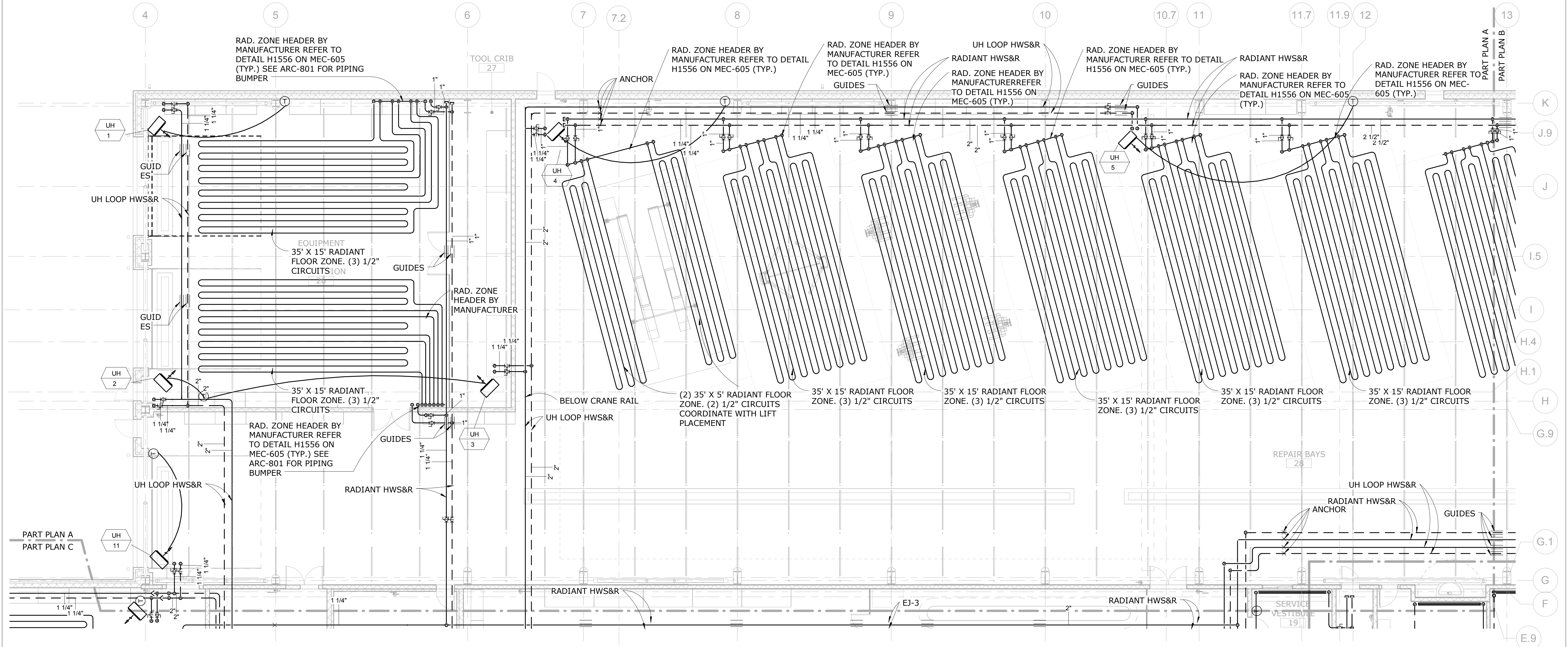
KEY PLAN

			<p>THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.</p> <p>Plotted: 10/21/2014 3:31:34 PM</p>	DESIGNER/DRAFTER <b>WJS</b>	 <p><b>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</b></p> <p>File Name: MPPP_CTDOT_Rocky Hill Repair Facility_Central.rvt</p>	SIGNATURE/BLOCK:		PROJECT TITLE	<p><b>REPAIR FACILITY</b></p>	TOWN	<p><b>ROCKY HILL</b></p>	PROJECT NO. <b>118-0167</b>	
				CHECKED BY: <b>TFC</b>								DRAWING TITLE	DRAWING NO. <b>MEC-207</b>
				SCALE  1/8" = 1'-0"									SHEET NO. <b>10.12</b>
NO.	Revision Description	Date											



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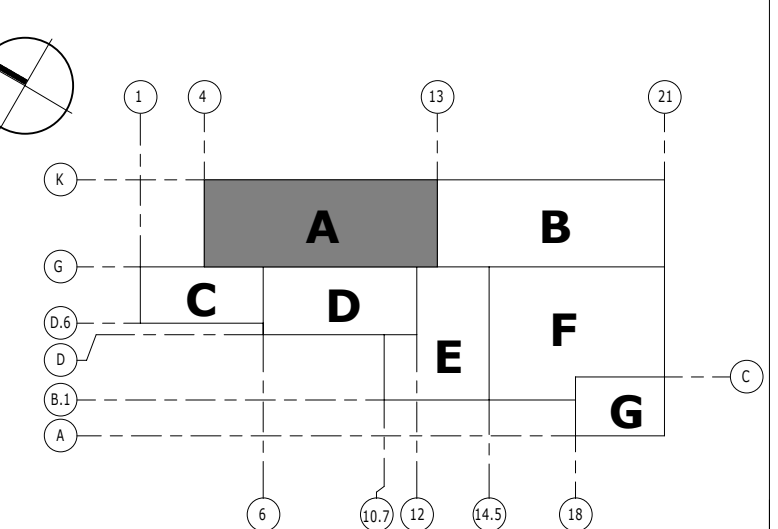




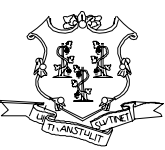
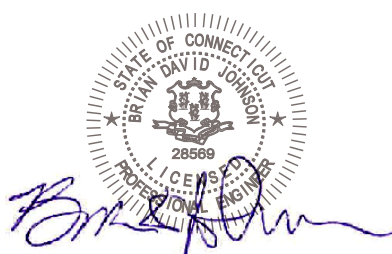
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SCALE: 1/8" = 1'-0"

PARTIAL PLAN LEGEND:

- A - NORTH REPAIR BAYS
- B - SOUTH REPAIR BAYS
- C - LUBE AND WASH BAYS
- D - STORES
- E - OFFICE AREA
- F - MACHINE SHOP
- G - PAINT AREA



KEY PLAN

			DESIGNER/DRAFTER <b>WJS</b> CHECKED BY: <b>TFC</b> SCALE 1/8" = 1'-0"	 <b>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</b> File Name: MPPP_CTDOT_Rocky Hill Repair Facility_Central.rvt	SIGNATURE/BLOCK: 	PROJECT TITLE <b>REPAIR FACILITY</b>	TOWN <b>ROCKY HILL</b>	PROJECT NO. <b>118-0167</b>	
NO.	Revision Description	Date						DRAWING TITLE <b>MECHANICAL PIPE - PART PLAN A</b>	SHEET NO. <b>10.14</b>

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.

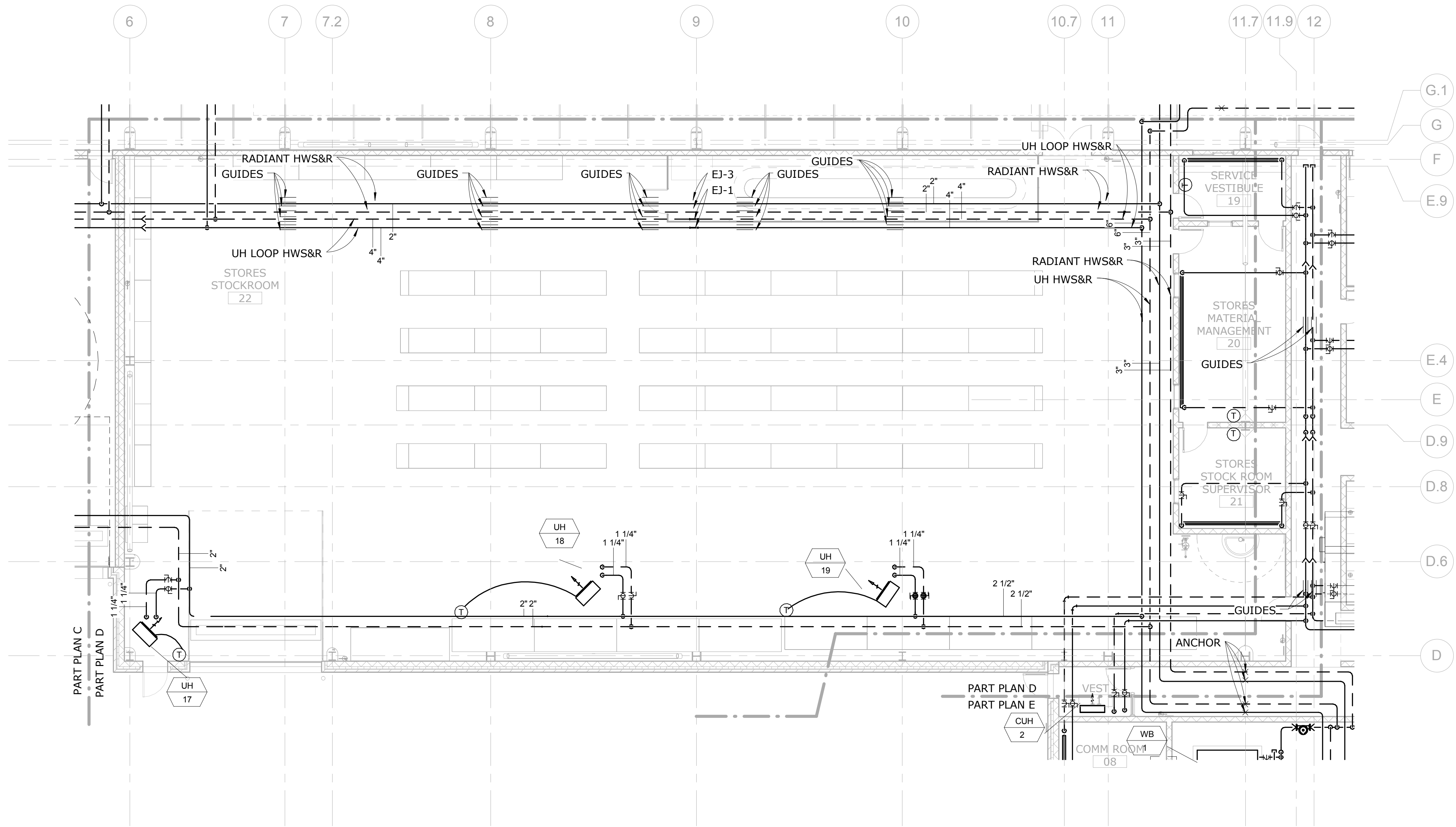
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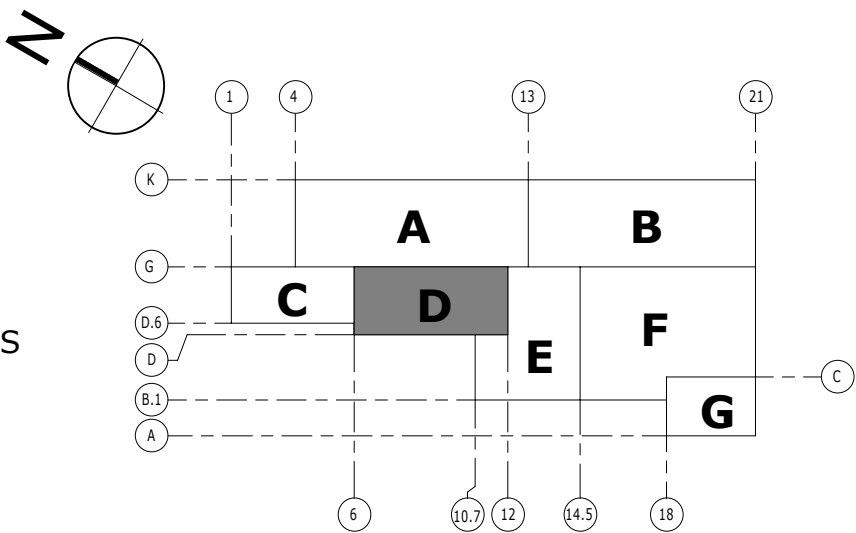




1 HVAC - PIPING - PART PLAN D - STORES  
SCALE: 1/8" = 1'-0"

PARTIAL PLAN LEGEND:

- A - NORTH REPAIR BAYS
- B - SOUTH REPAIR BAYS
- C - LUBE AND WASH BAYS
- D - STORES
- E - OFFICE AREA
- F - MACHINE SHOP
- G - PAINT AREA



KEY PLAN

NO.	Revision Description	Date

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.

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File Name: MPPP\_CTDOT\_Rocky Hill Repair Facility\_Central.rvt

SIGNATURE/BLOCK:



PROJECT TITLE

REPAIR FACILITY

TOWN

ROCKY HILL

DRAWING TITLE

MECHANICAL PIPE - PART  
PLAN D

PROJECT NO.

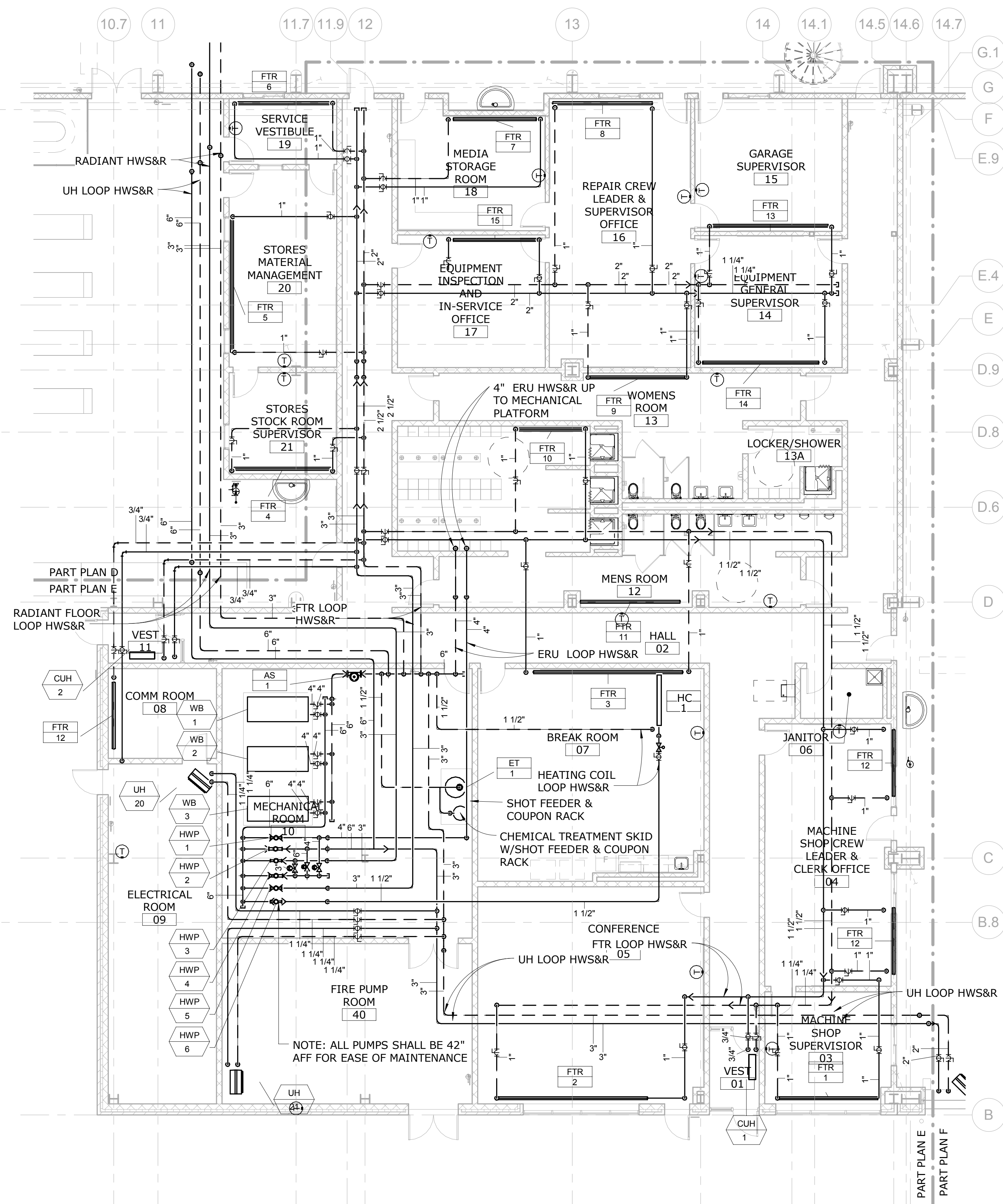
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DRAWING NO.

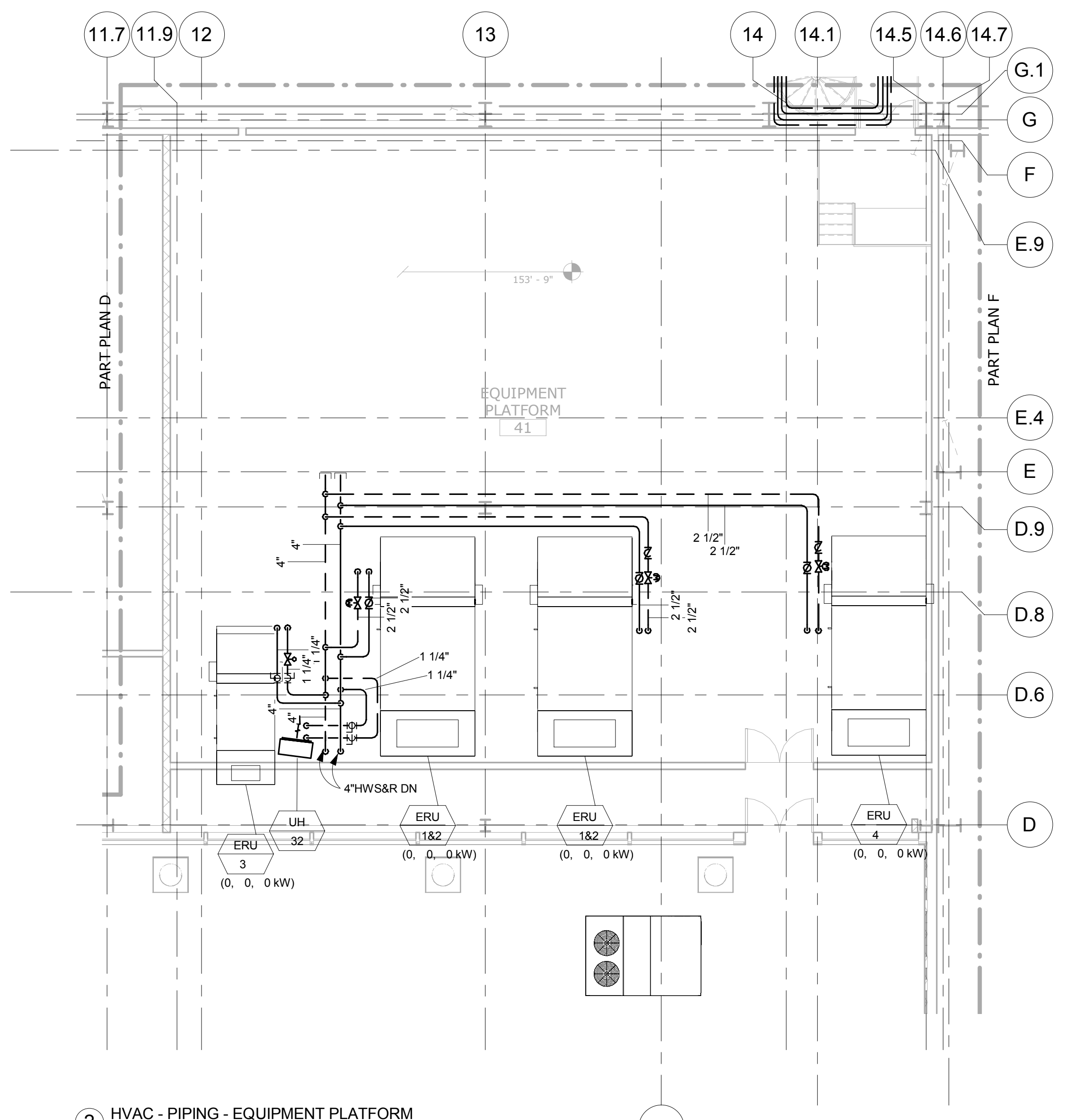
MEC-204P

SHEET NO.

10.17



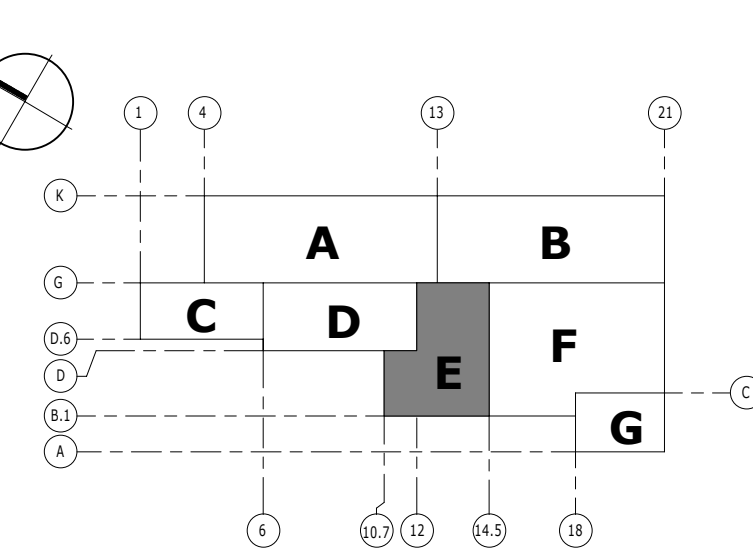
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SCALE: 1/8" = 1'-0"



2 HVAC - PIPING - EQUIPMENT PLATFORM  
SCALE: 1/8" = 1'-0"

PARTIAL PLAN LEGEND:

- A - NORTH REPAIR BAYS
- B - SOUTH REPAIR BAYS
- C - LUBE AND WASH BAYS
- D - STORES
- E - OFFICE AREA
- F - MACHINE SHOP
- G - PAINT AREA

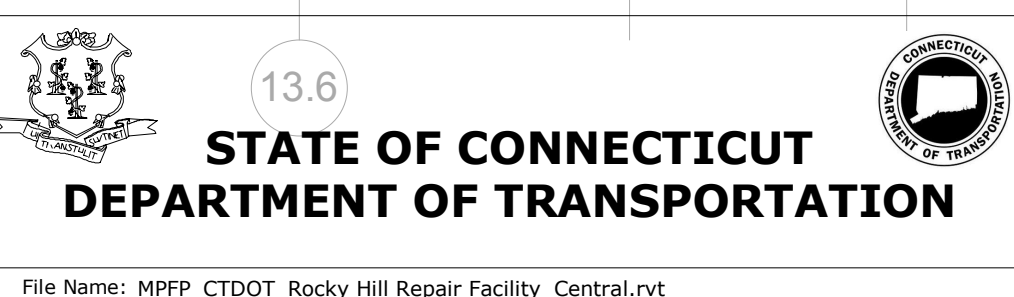


KEY PLAN

NO.	Revision Description	Date

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.

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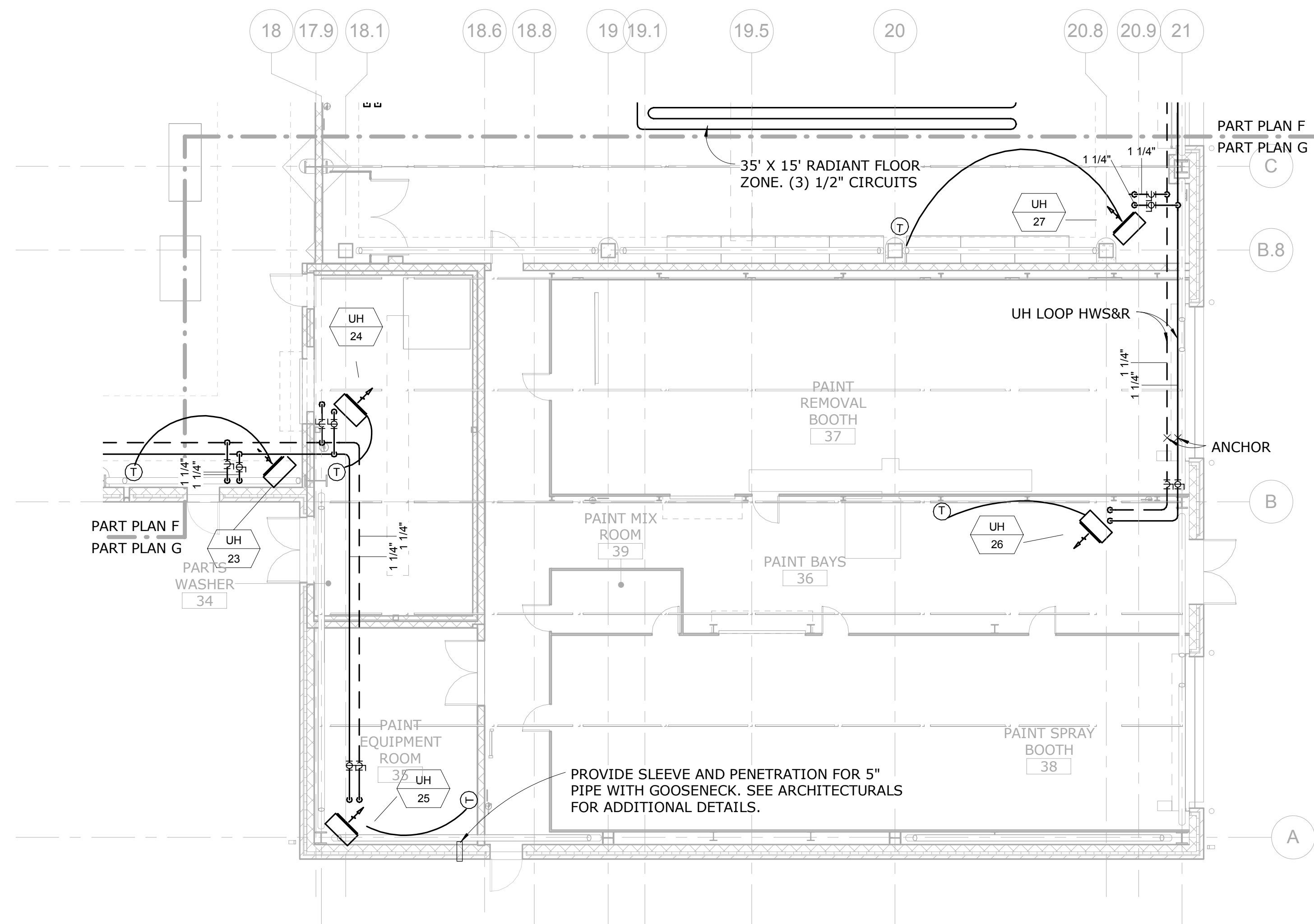
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**REPAIR FACILITY**

TOWN  
**ROCKY HILL**  
DRAWING TITLE  
**MECHANICAL PIPE - PART PLAN E & EQUIP. PLATFORM**  
PROJECT NO.  
**118-0167**  
DRAWING NO.  
**MEC-205P**  
SHEET NO.  
**10.18**



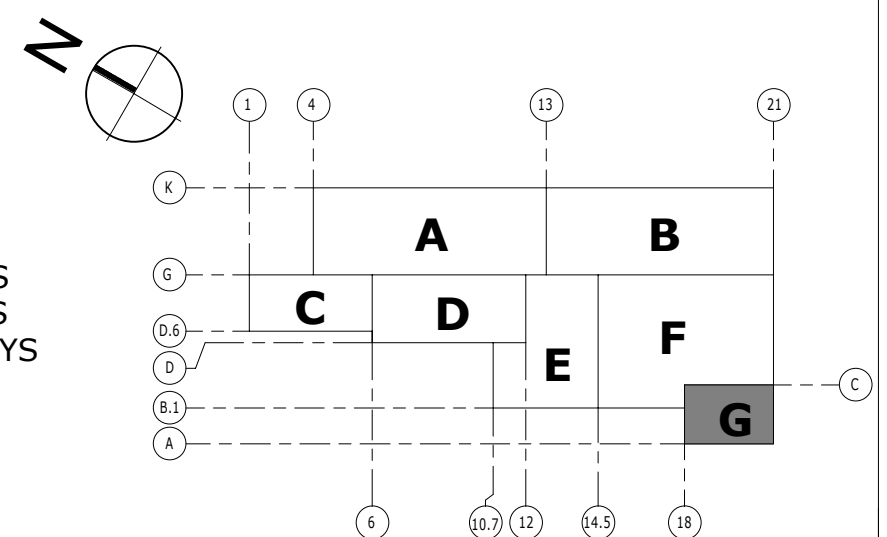
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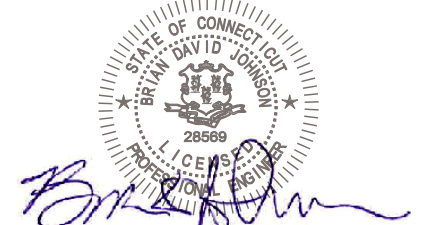
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PARTIAL PLAN LEGEND:

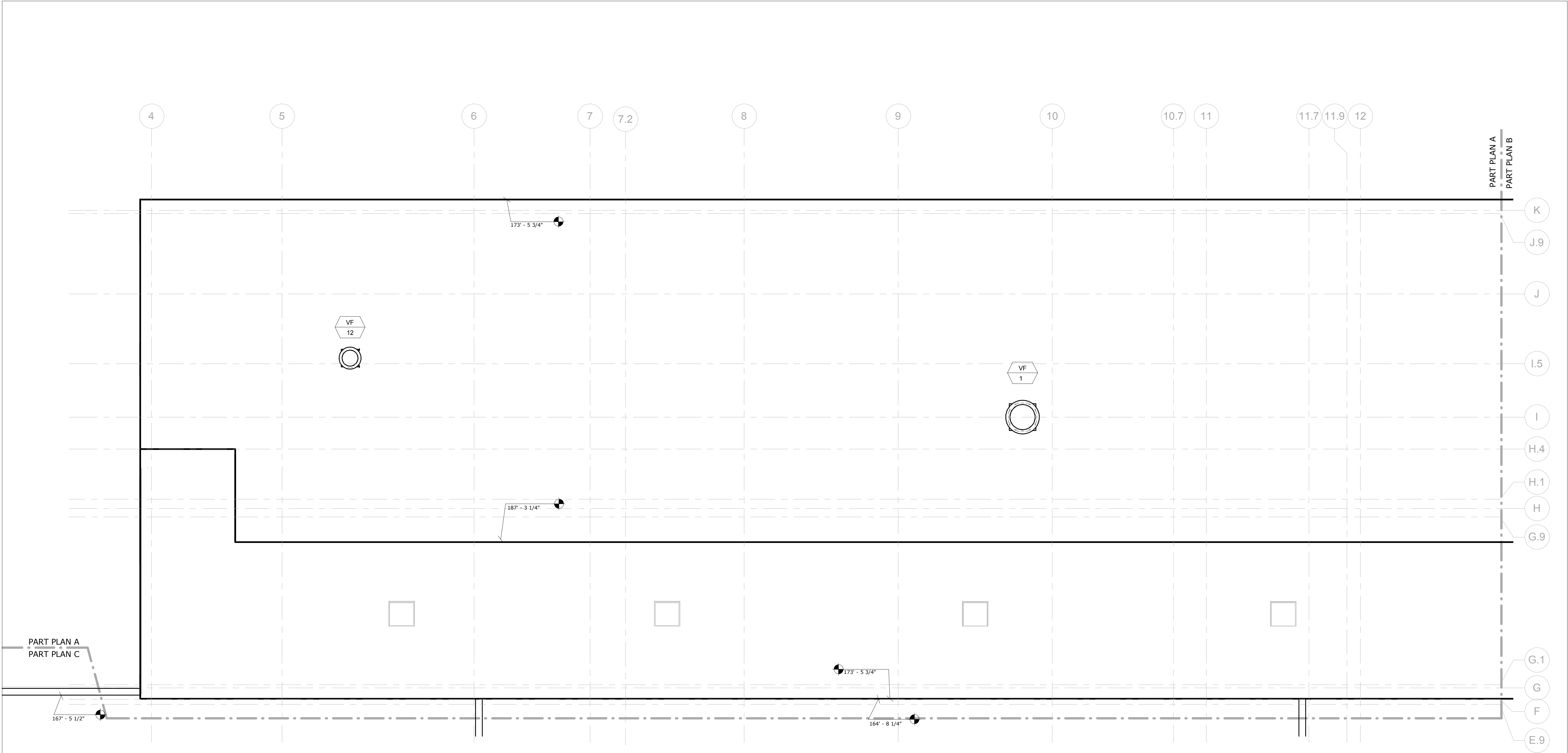
- A - NORTH REPAIR BAYS
- B - SOUTH REPAIR BAYS
- C - LUBE AND WASH BAYS
- D - STORES
- E - OFFICE AREA
- F - MACHINE SHOP
- G - PAINT AREA



KEY PLAN

		<p>THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.</p>	<p>DESIGNER/DRAFTER <b>WJS</b></p> <p>CHECKED BY: <b>TFC</b></p> <p>SCALE 1/8" = 1'-0"</p>	<p><b>STATE OF CONNECTICUT</b> <b>DEPARTMENT OF TRANSPORTATION</b></p> <p>File Name: MPPP_CTDOT_Rocky Hill Repair Facility_Central.rvt</p>	<p>SIGNATURE/BLOCK:</p> 	<p>PROJECT TITLE <b>REPAIR FACILITY</b></p>	<p>TOWN <b>ROCKY HILL</b></p> <p>DRAWING TITLE <b>MECHANICAL PIPE - PART PLAN G</b></p>	<p>PROJECT NO. <b>118-0167</b></p> <p>DRAWING NO. <b>MEC-207P</b></p> <p>SHEET NO. <b>10.20</b></p>
NO.	Revision Description	Date	Plotted: 10/21/2014 3:31:38 PM					

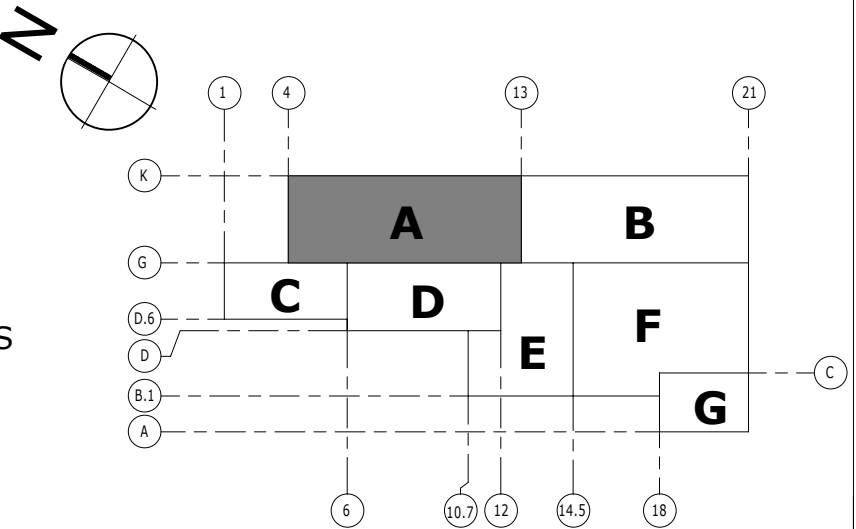




1 HVAC - DUCTWORK - ROOF LEVEL - PART PLAN A  
SCALE: 1/8" = 1'-0"

PARTIAL PLAN LEGEND:

- A - NORTH REPAIR BAYS
- B - SOUTH REPAIR BAYS
- C - LUBE AND WASH BAYS
- D - STORES
- E - OFFICE AREA
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NO.	Revision Description	Date

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1/8" = 1'-0"



**STATE OF CONNECTICUT**  
**DEPARTMENT OF TRANSPORTATION**



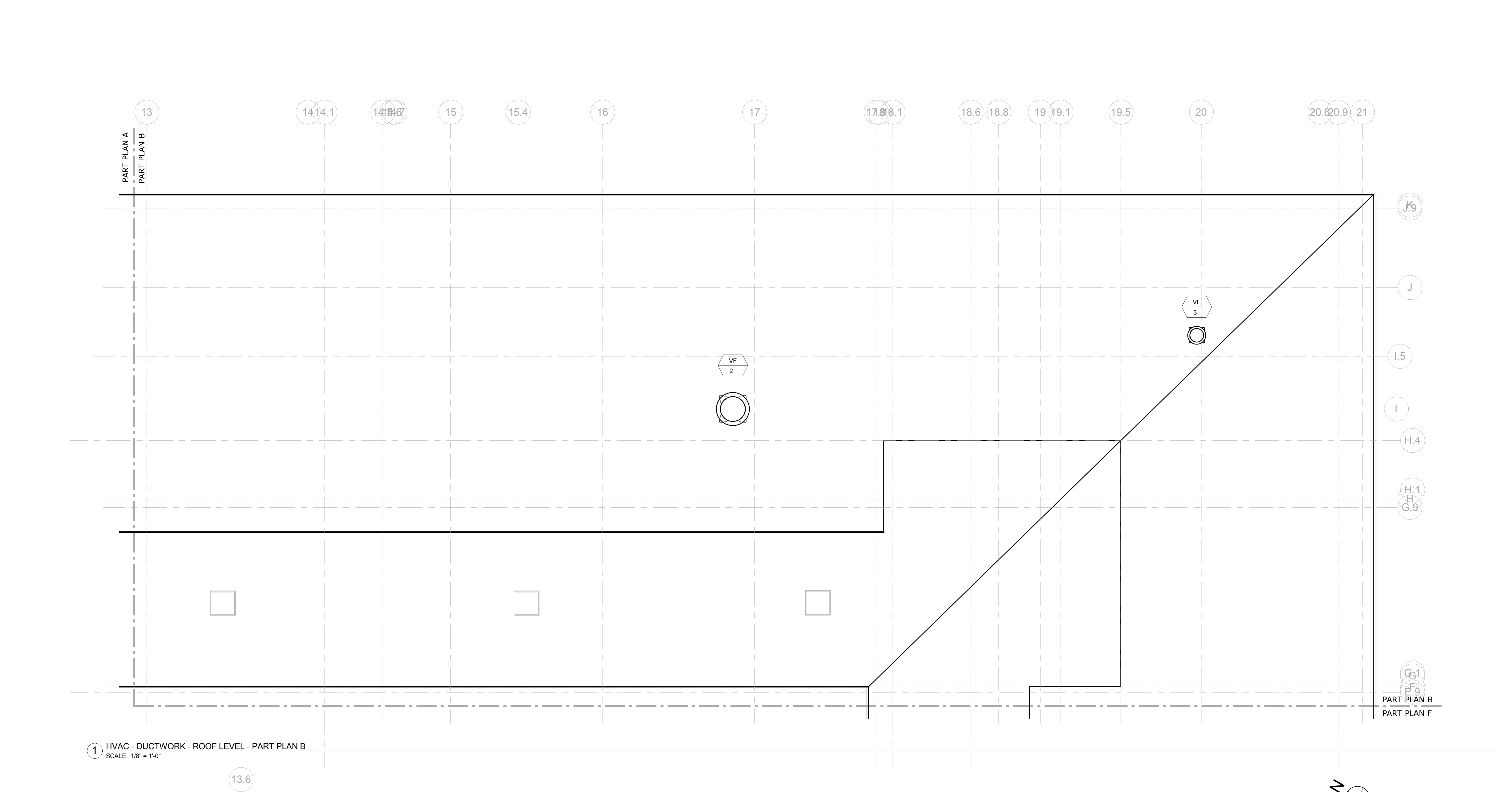
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PROJECT TITLE  
**REPAIR FACILITY**

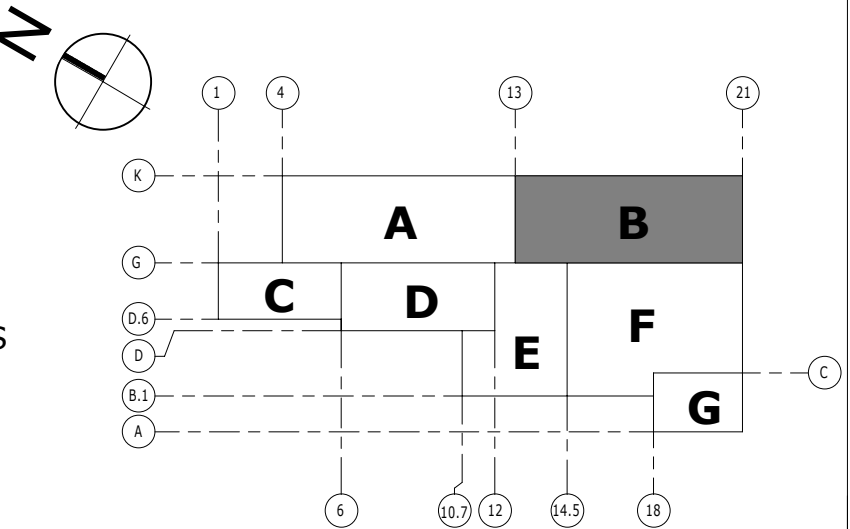
TOWN  
**ROCKY HILL**  
DRAWING TITLE  
**MECHANICAL ROOF - PART PLAN A**

PROJECT NO.  
**118-0167**  
DRAWING NO.  
**MEC-301**  
SHEET NO.  
**10.21**



PARTIAL PLAN LEGEND:

- A - NORTH REPAIR BAYS
- B - SOUTH REPAIR BAYS
- C - LUBE AND WASH BAYS
- D - STORES
- E - OFFICE AREA
- F - MACHINE SHOP
- G - PAINT AREA



NO.	Revision Description	Date

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.

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SCALE  
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**STATE OF CONNECTICUT**  
**DEPARTMENT OF TRANSPORTATION**

File Name: MPPP\_CTDOT\_Rocky Hill Repair Facility\_Central.rvt



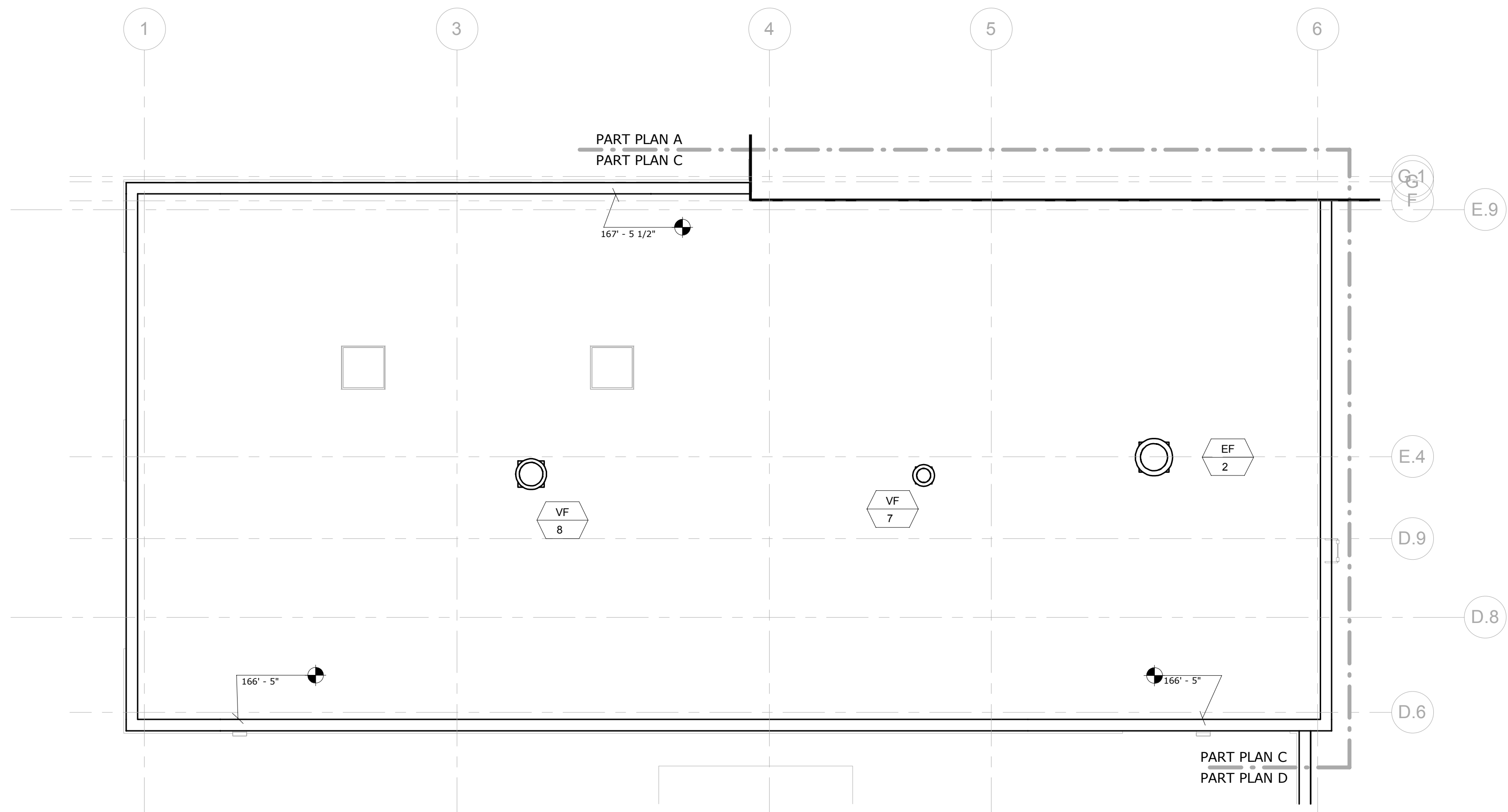
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PROJECT TITLE  
**REPAIR FACILITY**

TOWN  
**ROCKY HILL**  
DRAWING TITLE  
**MECHANICAL ROOF - PART PLAN B**

PROJECT NO.  
**118-0167**  
DRAWING NO.  
**MEC-302**  
SHEET NO.  
**10.22**

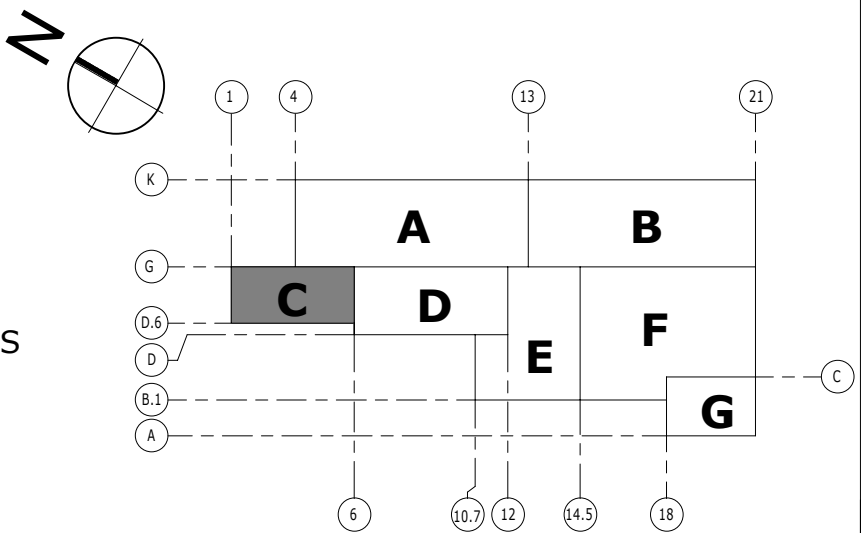




1 HVAC - DUCTWORK - ROOF LEVEL - PART PLAN C  
SCALE: 1/8" = 1'-0"

PARTIAL PLAN LEGEND:

- A - NORTH REPAIR BAYS
- B - SOUTH REPAIR BAYS
- C - LUBE AND WASH BAYS
- D - STORES
- E - OFFICE AREA
- F - MACHINE SHOP
- G - PAINT AREA



KEY PLAN

NO.	Revision Description	Date

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**STATE OF CONNECTICUT  
DEPARTMENT OF TRANSPORTATION**

File Name: MPPP\_CTDOT\_Rocky Hill Repair Facility\_Central.rvt



SIGNATURE/BLOCK:  


PROJECT TITLE  
**REPAIR FACILITY**

TOWN  
**ROCKY HILL**  
DRAWING TITLE  
**MECHANICAL ROOF - PART  
PLAN C**

PROJECT NO.  
**118-0167**  
DRAWING NO.  
**MEC-303**  
SHEET NO.  
**10.23**

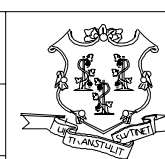


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TOWN	<div> <div>ROCKY HILL</div> </div>	PROJECT NO.	118-0167
		DRAWING NO.	MEC-304
DRAWING TITLE	<div>MECHANICAL ROOF - PART</div> <div>PLAN D</div>	SHEET NO.	10.24

				THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.
NO.	Revision Description		Date	Plotted: 10/21/2014 3:31:45 PM

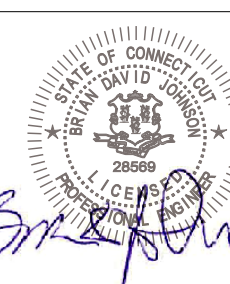
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**STATE OF CONNECTICUT  
DEPARTMENT OF TRANSPORTATION**

File Name: MPFP\_CTDOT\_Rocky Hill Repair Facility\_Central.rvt

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PROJECT TITLE
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## REPAIR FACILITY

TOWN
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## ROCKY HILL

DRAWING TITLE

**MECHANICAL ROOF - PART  
PLAN D**

PROJECT NO.
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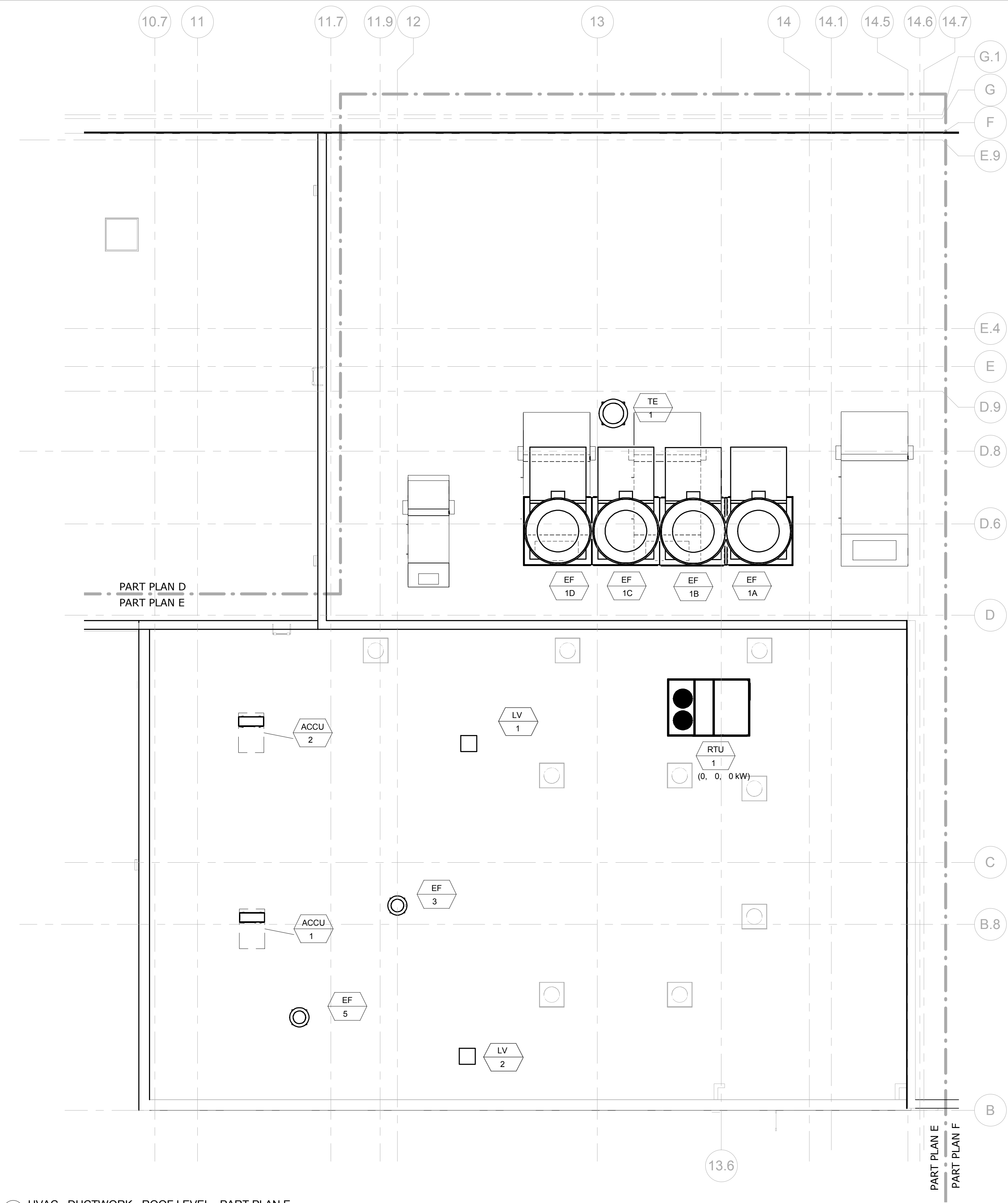
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DRAWING NO.  
**MEC-304**

SHEET NO.

**10.24**

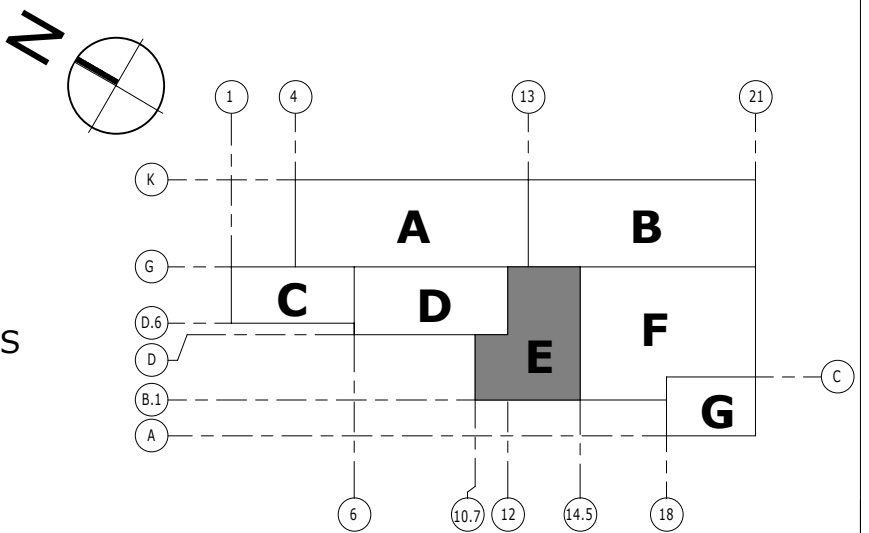




1 HVAC - DUCTWORK - ROOF LEVEL - PART PLAN E  
SCALE: 1/8" = 1'-0"

PARTIAL PLAN LEGEND:

- A - NORTH REPAIR BAYS
- B - SOUTH REPAIR BAYS
- C - LUBE AND WASH BAYS
- D - STORES
- E - OFFICE AREA
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KEY PLAN

NO.	Revision Description	Date

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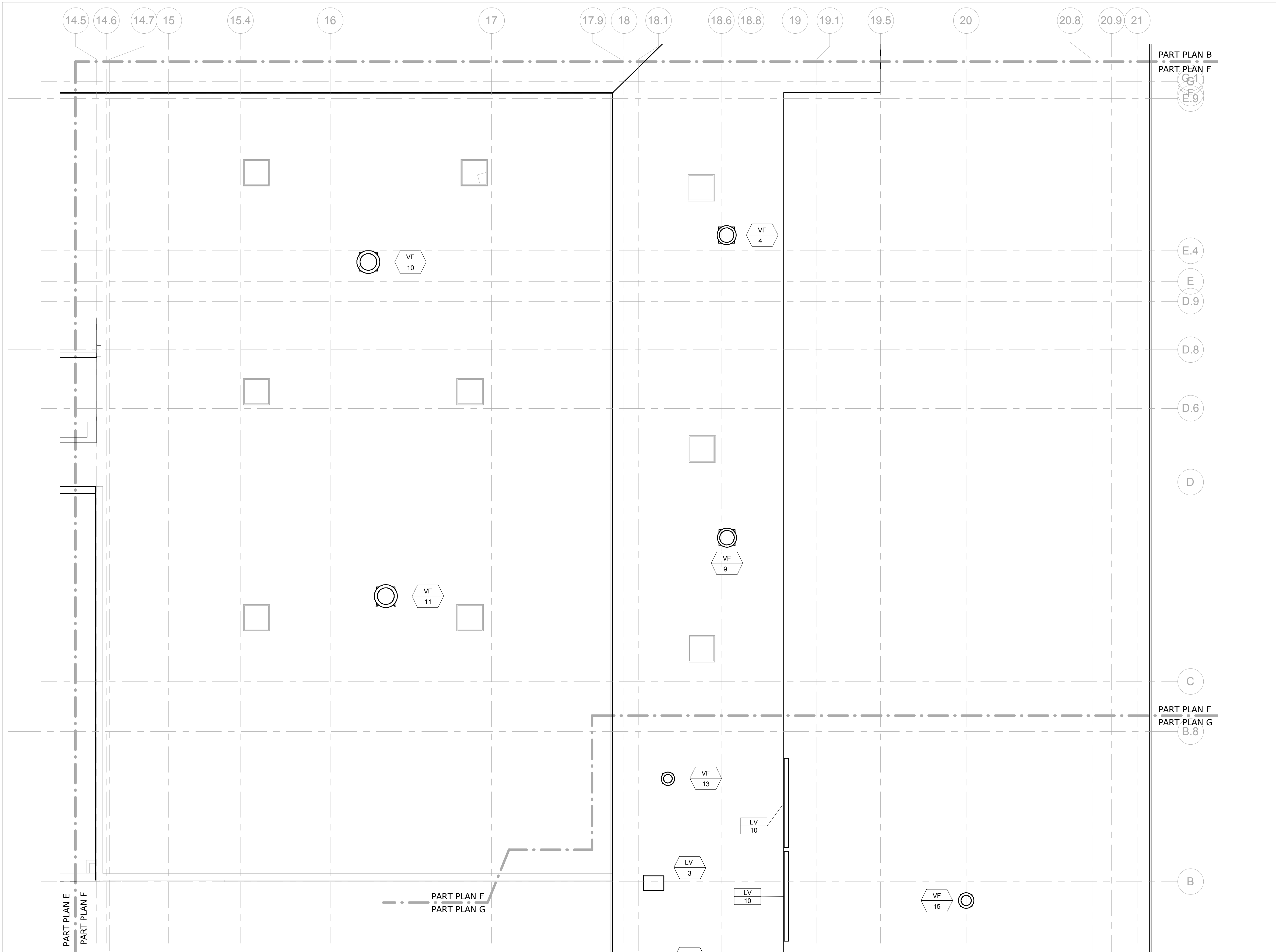
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**TFC**  
SCALE  
1/8" = 1'-0"

  
**STATE OF CONNECTICUT  
DEPARTMENT OF TRANSPORTATION**  
File Name: MPPP\_CTDOT\_Rocky Hill Repair Facility\_Central.rvt

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PROJECT TITLE  
**REPAIR FACILITY**

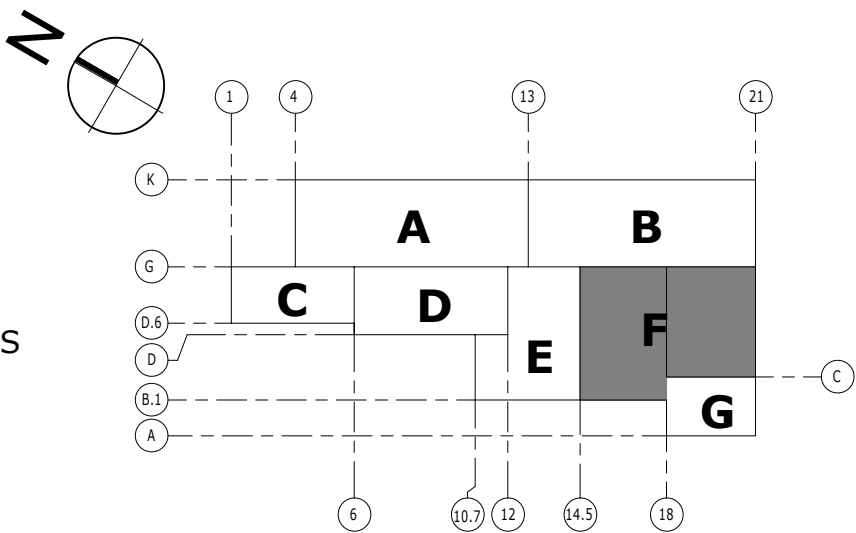
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**ROCKY HILL**  
DRAWING TITLE  
**MECHANICAL ROOF - PART  
PLAN E**  
PROJECT NO.  
**118-0167**  
DRAWING NO.  
**MEC-305**  
SHEET NO.  
**10.25**



1 HVAC - DUCTWORK - ROOF LEVEL - PART PLAN F  
SCALE: 1/8" = 1'-0"

PARTIAL PLAN LEGEND:

- A - NORTH REPAIR BAYS
- B - SOUTH REPAIR BAYS
- C - LUBE AND WASH BAYS
- D - STORES
- E - OFFICE AREA
- F - MACHINE SHOP
- G - PAINT AREA



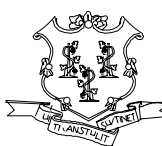
KEY PLAN

NO.	Revision Description	Date

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.

Plotted: 10/21/2014 3:31:50 PM

DESIGNER/DRAFTER  
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CHECKED BY:  
**TFC**  
SCALE  
1/8" = 1'-0"



STATE OF CONNECTICUT  
DEPARTMENT OF TRANSPORTATION

File Name: MPPP\_CTDOT\_Rocky Hill Repair Facility\_Central.rvt



SIGNATURE/BLOCK:



PROJECT TITLE

REPAIR FACILITY

TOWN

ROCKY HILL

DRAWING TITLE  
**MECHANICAL ROOF - PART  
PLAN F**

PROJECT NO.

**118-0167**

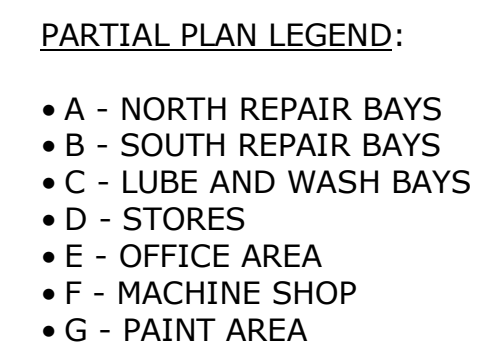
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SHEET NO.

**10.26**

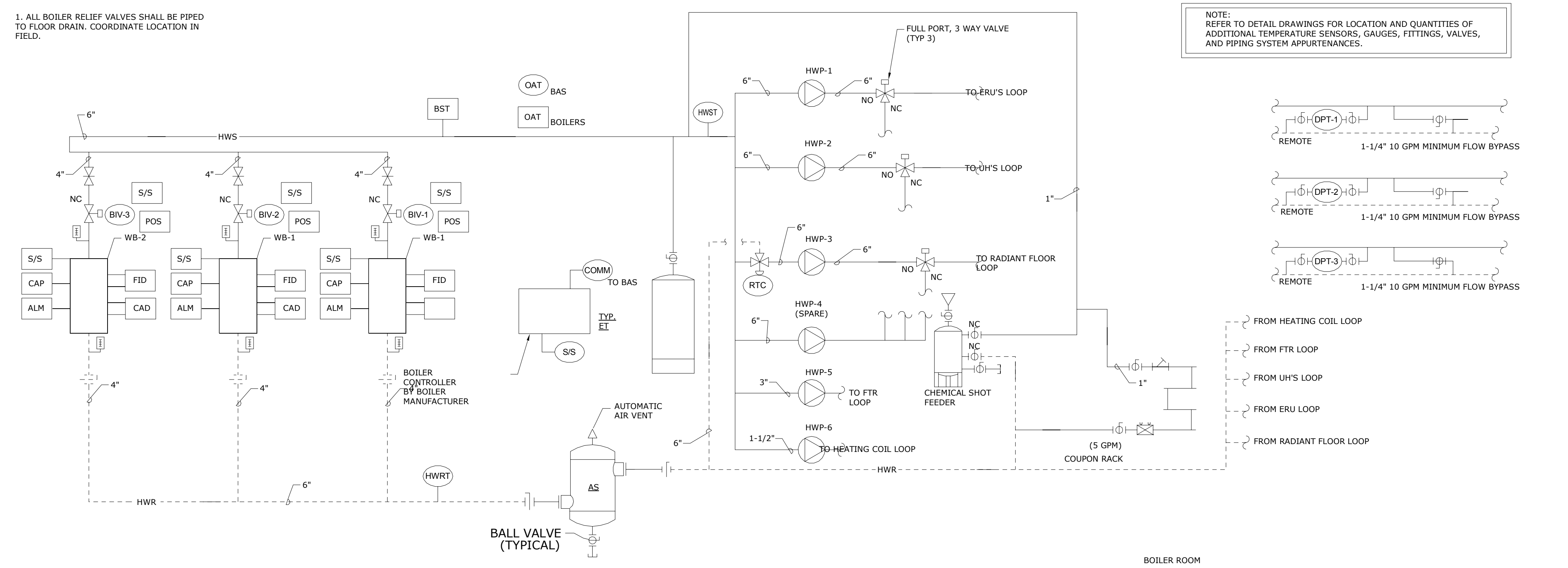




TOWN	<b>ROCKY HILL</b>	PROJECT NO.	<b>118-0167</b>
		DRAWING NO.	<b>MEC-307</b>
	DRAWING TITLE	<b>MECHANICAL ROOF - PART PLAN G</b>	SHEET NO.

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NOTES:



GENERAL

- BOILER MANUFACTURER SHALL PROVIDE BOILER CONTROLLER TO SEQUENCE AND MODULATE ALL BOILERS, AND PROVIDE MODBUS, BACNET, OR LONTALK 2-WAY COMMUNICATIONS, INCLUDING ALARMS, BETWEEN THE BOILER CONTROLLER AND THE BAS. BOILER CONTROLS SHALL BE SET-UP BY THE MANUFACTURER TO INTERLOCK WITH ANY ASSOCIATED COMBUSTION AIR DAMPERS, ISOLATION VALVES, AND VENT DAMPERS. BAS CONTRACTOR SHALL INSTALL AND WIRE REMOTE SENSORS FURNISHED BY THE BOILER MANUFACTURER, PROVIDE LINE SIZED 2-POSITION BOILER ISOLATION VALVES (WITH POSITION INDICATION AND CONTROL SIGNALS INTERFACED WITH BOILER CONTROLS), PROVIDE ALL PUMP CONTROLS, AND PROVIDE DYNAMIC GRAPHICS (ALL DATA) OF THE BOILER SYSTEM AT THE OPERATOR'S WORKSTATION.
- BAS CONTRACTOR SHALL MEET WITH BOILER CONTROLS MANUFACTURER TO COORDINATE THE REQUIRED CONTROL SIGNALS, STATUS SIGNALS (FOR THE GRAPHICS), AND ALARMS FOR THE BOILER SYSTEM. BAS CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTATION OF ALL NECESSARY CONTROL SEQUENCES INCLUDING ALL CONTROL DEVICES AND LOGISTICS REQUIRED TO MEET THE DESIGN INTENT REGARDLESS OF WHAT MAY OR MAY NOT BE PROVIDED BY EQUIPMENT MANUFACTURERS.
- ALL SET POINTS AND TIME DELAYS SHALL BE ADJUSTABLE WITHOUT ANY PROGRAM CHANGES. ALL ACTUATORS SHALL BE ELECTRONIC. PROVIDE FOR LOCAL EQUIPMENT OVERRIDE OF CONTROL SYSTEM.
- BOILERS HAVE DUCTED COMBUSTION AIR. INDIVIDUAL COMBUSTION AIR DAMPERS (CAD) PROVIDED BY BOILER MANUFACTURER SHALL PROVE AT LEAST 85% OPEN BEFORE BURNER CAN START AND PROVE CLOSED AFTER BURNER STOPS. IF ANY CAD OR FID FAILS, AN ALARM SHALL BE SENT TO THE BAS AND, IF NEEDED, THE NEXT BOILER IN SEQUENCE SHALL BE ENERGIZED.
- PROVIDE TEMPERATURE SENSORS AND OTHER DEVICES SHOWN AND COORDINATE ALL SENSOR INSTALLATION LOCATIONS WITH THE MECHANICAL CONTRACTOR. COORDINATE AND INSURE MANUFACTURER'S RECOMMENDED UPSTREAM AND DOWNSTREAM PIPE DIAMETERS ARE PROVIDED - ESPECIALLY FOR FLOW METERS. WIRE BOILER MANUFACTURER'S CONTROLLER TO EACH BOILER AND SENSOR PER MANUFACTURER'S DIAGRAMS. COORDINATE TO OBTAIN ALL INFO FOR BAS GRAPHICS.
- BAS CONTRACTOR SHALL PROVIDE AND WIRE INDIVIDUAL FIRESTATS (NOT SHOWN) TO SHUTDOWN EACH BOILER AND INSURE THE BOILER EMERGENCY SHUT-OFF SWITCHES STOP ALL BOILERS.

HOT WATER CONTROL

- THE BOILER SYSTEM SHALL NORMALLY BE ON AND SHALL BE CAPABLE OF BEING AUTOMATICALLY STARTED AND STOPPED BY THE BAS. THE CONTROL OF BOILER STAGING AND CAPACITY SHALL BE BY THE BOILER MANUFACTURER.
- BEFORE THE BOILERS ARE STARTED, THE LEAD BOILER ISOLATION VALVE (BIV) SHALL BE OPENED AND THE HOT WATER PUMP ASSOCIATED WITH THE SYSTEM CALLING FOR HEAT SHALL BE STARTED AT LOW SPEED BY THE BAS. IF PUMP FAILS, THE BAS SHALL ALARM.
- OPERATING SPEED FOR THE PUMP SHALL BE THE LOWEST REQUIRED TO MAINTAIN THE SET POINT OF THE ASSOCIATED REMOTE DIFFERENTIAL PRESSURE SENSOR (DPT) LOCATED NEAR THE FURTHEST EQUIPMENT (TYP OF 3). INITIAL SET POINT OF REMOTE DPT SHALL BE 15 PSI WITH FINAL SET POINT COORDINATED WITH THE BALANCING CONTRACTOR TO THE LOWEST NEEDED TO GET FULL FLOW TO THE MOST REMOTE EQUIPMENT (WITH THE EQUIPMENT CONTROL VALVE NO MORE THAN 90% OPEN).
- THE BOILER SUPPLY WATER TEMPERATURE AT SENSOR BST SHALL BE INITIALLY SET TO A MAXIMUM OF 140°F. BOILERS SHALL STAGE CAPACITY AT OPTIMAL EFFICIENCY TO MAINTAIN COMMON SUPPLY WATER TEMPERATURE CONTROL.

BOILER CONTROL SYSTEM

- WHEN A BOILER IS NEEDED TO OPERATE, THE ASSOCIATED COMBUSTION AIR DAMPER (CAD), AND BOILER ISOLATION VALVE (BIV) SHALL PROVE OPEN FIRST. WHEN A BOILER IS NOT NEEDED THE CAD, FID, AND BIV SHALL CLOSE 20 SECONDS (ADJ.) AFTER THE BURNER IS STOPPED. AN EXCEPTION IS THE LEAD BOILER WHOSE BIV SHALL ALWAYS REMAIN OPEN TO ALLOW PUMP FLOW, AS PROVIDED BY CONTROLS CONTRACTOR.
- ON A CALL FOR HEATING, THE LEAD BOILER SHALL START ON LOW FIRE. THE BOILER HOT SUPPLY WATER TEMPERATURE AT BST SHALL BE MAINTAINED BY STAGING OF BOILERS AND MODULATING THE BURNERS. MANUFACTURER'S BOILER CONTROLLER SHALL START AND OPERATE THE LAG BOILERS WHEN NEEDED TO MAINTAIN EITHER THE SYSTEM SUPPLY TEMPERATURE AT BST OR WHEN THE SYSTEM WOULD OPERATE MORE EFFICIENTLY WITH MORE BOILERS ON.
- THE BOILER CONTROLLER SHALL ROTATE THE LEAD AND LAG BOILERS TO ASSURE THAT ALL BOILERS RECEIVE EQUAL RUN TIME.
- WHEN LOAD DROPS (BASED ON BOILER CAPACITY AND EFFICIENCY) LAG BOILERS SHALL BE STOPPED AS REQUIRED.
- THE BOILER CONTROLLER SHALL ENABLE/DISABLE, MONITOR STATUS, AND DISPLAY ALARM SIGNALS FOR FLAME FAILURE AND LOW WATER ALARM. UPON A BOILER FAILURE ALARM, FLAME FAILURE ALARM, OR LOW WATER ALARM, THE RESPECTIVE BOILER SHALL BE DE-ENERGIZED, THE NEXT BOILER IN THE LEAD/LAG SEQUENCE OF OPERATION SHALL BE ENERGIZED, AND EACH ALARM SHALL BE COMMUNICATED TO THE BAS FOR ALARM/DISPLAY AT THE OPERATOR'S WORKSTATION.

BOILER MOUNTED CONTROLS (BY BOILER MANUFACTURER)

- ALL CONTROLS SHALL BE LOCATED IN A HINGED LOCKING METAL CABINET WITH NEMA 1A ENCLOSURE AND NEOPRENE DUST SEAL. CONTROLS SHALL BE ELECTRONIC. ALL WIRING SHALL BE COLOR CODED. PROVIDE CONTROL TRANSFORMER, AND FUSING IN ACCORDANCE WITH ALL CODE REQUIREMENTS. PROVIDE DUAL ADJUSTABLE HIGH LIMIT CONTROLS WITH ONE SET AT 190°F WITH MANUAL RESET AND ALARM CONTACT, AND ONE SET AT 180°F WITH AUTO RESET AFTER AN ADJUSTABLE DIFFERENTIAL; ADJUSTABLE, RESETTABLE OPERATING CONTROL (WITH INITIAL RESET SCHEDULE BETWEEN 140°F AND 100°F BASED ON OAT); AND LOW WATER CUT OFF DEVICE WITH MANUAL RESET. BURNER CONTROLS SHALL HAVE MINIMUM 5:1 TURNDOWN.
- THE SEQUENCE OF BURNER OPERATION SHALL BE CONTROLLED BY A PROGRAMMING RELAY OF THE ELECTRONIC TYPE PROVIDING PRE-PURGE AND POST-PURGE CYCLES AND WITH FULL PROTECTION AGAINST FLAME FAILURE DURING BOTH IGNITION AND NORMAL BURNER OPERATING PERIODS. OPERATING OF THE PROGRAMMING RELAY SHALL BE GOVERNED BY EXCESS TEMPERATURE LIMIT SWITCH, AN ELECTRONIC FLAME FAILURE PROTECTION DEVICE AND THE LOW WATER CUT-OFF TO SHUT DOWN THE BOILER. AFTER THE SAFETY SHUTDOWN MANUAL RESET SHALL BE REQUIRED. THE BURNER BLOWER CONTROLS SHALL BE INTERLOCKED TO PREVENT BURNER OPERATION WITHOUT FORCED DRAFT. MEANS SHALL BE PROVIDED FOR AUTOMATICALLY DELAYING BURNER OPERATION WHILE ALLOWING FAN TO SCAVENGE BOILER PASSES OF COMBUSTION GASES AFTER FLAME OR OTHER BURNER STOPPAGE. EACH BURNER SHALL BE PROVIDED WITH COMBUSTION AIR, FLUE DAMPER, AND ISOLATION VALVE OPEN/CLOSE CONTACTS AND ALARM.

REPORTING FUNCTIONS

- HISTORIES/TRENDING
  - THE BAS SHALL PRINT OUT ANY TEMPERATURE OR DATA FROM ANY SENSOR OR DEFINED VARIABLE ON REQUEST OF OPERATOR. THIS SHALL BE PROVIDED FOR BOTH INDIVIDUAL BOILERS AND COMMON SENSORS.
  - THE BAS SHALL BE PROGRAMMED TO RECORD HISTORIES OF ALL TEMPERATURES (BOILER WATER SUPPLY AND RETURN TEMPERATURES, HOT WATER SUPPLY AND RETURN TEMPERATURES, ETC.), STATUS, FLOW RATE, HOUR OF DAY, HOURS OF OPERATION ASSOCIATED WITH EACH PIECE OF EQUIPMENT. IN ADDITION, RECORD HISTORIES OF ANY OTHER ITEM OVER ANY TIME PERIOD REQUESTED BY OPERATOR. COORDINATE WITH OWNER FOR INITIAL LIST OF HISTORY ITEMS.
  - THE BAS SHALL PRINT OUT ALL CHANGES IN EQUIPMENT STATUS AS THEY OCCUR.
- INITIALLY THE BAS SHALL TREND AND LOG BOILER PLANT CAPACITY (FLOW AT FMT AND DIFFERENTIAL TEMPERATURE BETWEEN MATCHED SENSORS HWST AND HWRT), PUMP SPEED, REMOTE DPT READING, OAT, WHICH BOILERS ARE ON AND AT WHAT CAPACITY, ALONG WITH TIME OF DAY.
- ALARMS
  - ALARM MESSAGES SHALL BE DISPLAYED AND PRINTED AT THE OPERATORS WORKSTATION.
  - IN ADDITION TO THE ALARMS PREVIOUSLY LISTED, ALL SENSORS AND VARIABLES SHALL BE CAPABLE OF HIGH/LOW ALARM POINTS. AS A MINIMUM, THE FOLLOWING SHALL BE ALARMED AFTER APPROPRIATE TIME DELAYS:
    - IF ANY PIECE OF EQUIPMENT IS INDICATED AS OFF WHEN IT SHOULD BE ON.
    - IF HWST IS 10 DEGREES ABOVE OR BELOW THE SET POINT DURING HEATING CYCLE. IGNORE THIS ALARM IF CYCLE HAS JUST BEEN STARTED WITHIN 20 MINUTES.
    - IF ANY PIECE OF EQUIPMENT IS ON THAT IS INDICATED AS OFF OR FAILS.
- GRAPHICS
  - PROVIDE OVERALL SYSTEM, INDIVIDUAL BOILER AND PUMP GRAPHICS WITH REAL TIME UPDATING OF CONDITIONS (STATUS, TEMPERATURES, FLOWS, ETC.).
  - PROVIDE FLOW DIAGRAMS FOR EVERY SYSTEM WITH ALL INSTRUMENTATION AND DATA (IN SPECIFICATIONS).

USER INTERFACE

- BAS CONTRACTOR SHALL PROVIDE PROGRAMMING TO PROVIDE A MENU ALLOWING THE OPERATOR TO EASILY OPEN ALL CONTROL VALVES CONNECTED TO THE HOT WATER SYSTEM ON A FLOOR BY FLOOR BASIS AND GLOBALLY (ALL VALVES) FOR USE DURING CLEANING/FLUSHING, TESTING AND BALANCING WORK, AND FOR AIR PURGING.

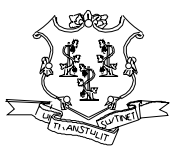

STAND-BY POWER

- BOILERS, ALL BOILER CONTROLS, AND THE HW PUMPS SHALL BE ON STANDBY POWER AND SHALL AUTOMATICALLY RESTART AND OPERATE NORMALLY DURING A POWER FAILURE AFTER THE GENERATOR HAS STARTED.
- PROVIDE AUTOMATIC RE-START OF BOILER PLANT UPON RETURN TO NORMAL POWER.

NDK

CONDENSING BOILER PLANT CONTROL / FLOW DIAGRAM AND SEQUENCE OF OPERATION

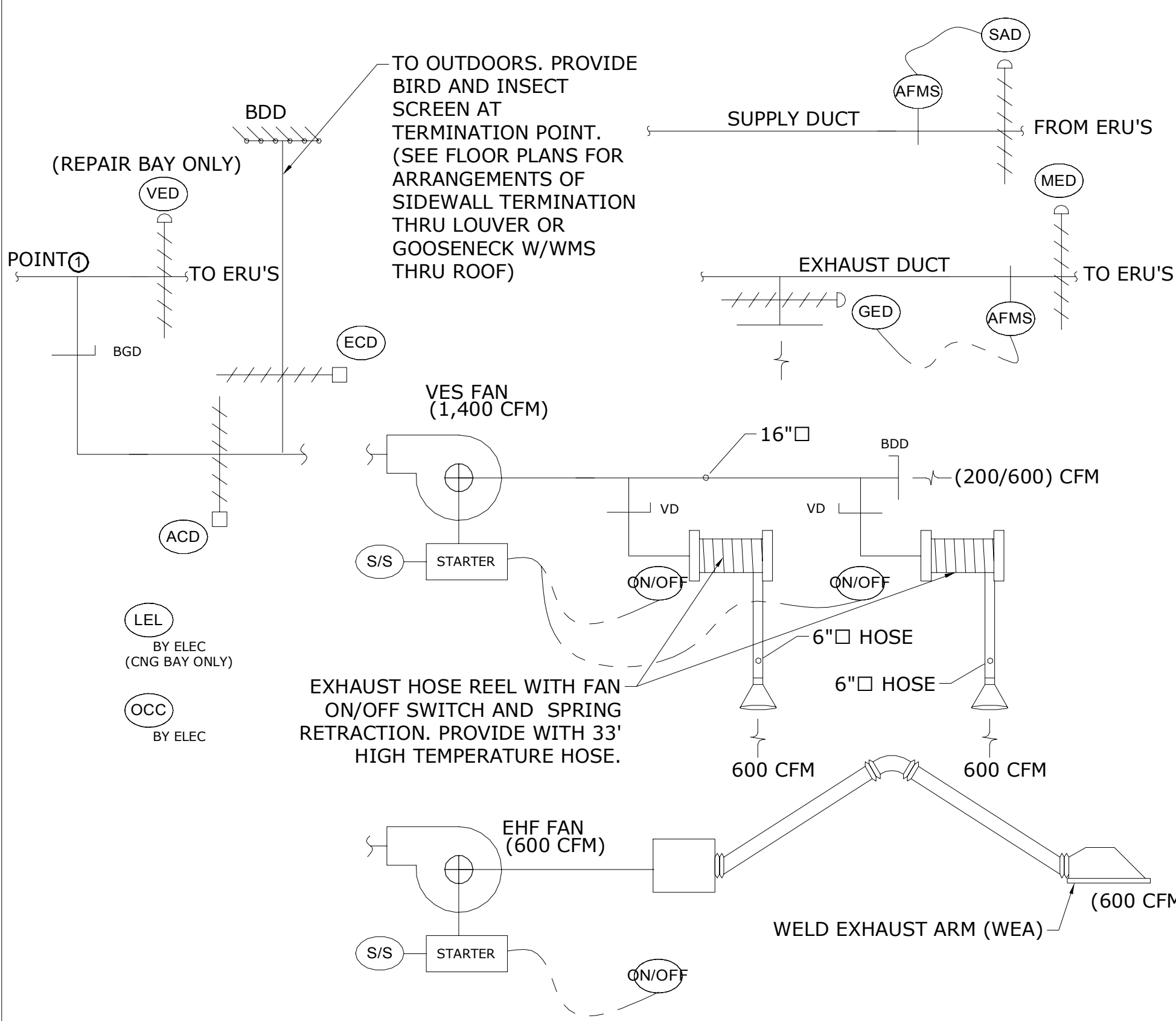
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				DESIGNER/DRAFTER <b>WJS</b>	 <b>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</b>	SIGNATURE/BLOCK: 	PROJECT TITLE <b>REPAIR FACILITY</b>	TOWN <b>ROCKY HILL</b>	PROJECT NO. <b>118-0167</b>			
				CHECKED BY: <b>TFC</b>						DRAWING TITLE <b>MECHANICAL CONTROLS I</b>	DRAWING NO. <b>MEC-500</b>	
				SCALE <b>1/8" = 1'-0"</b>								SHEET NO. <b>10.28</b>
NO.	Revision Description	Date	Plotted: 10/21/2014 3:31:54 PM	File Name: MPFP_CTDOT_Rocky Hill Repair Facility_Central.rvt								









HOSE REELS AND VES FANS

- WHEN BOTH HOSE REELS ARE RETRACTED THE VES FAN SHALL BE OFF.
- WHILE EITHER HOSE REEL IS IN USE, FAN SHALL BE COMMANDED ON TO RUN AT BALANCED VALUE OF 1400 CFM.
- COUNTER BALANCED BACKDRAFT DAMPER (BDD) SHALL BE BALANCED FOR NO MORE THAN 200 CFM LEAKAGE WHILE THE VES FAN IS RUNNING AND BOTH VES HOSE REELS ARE EXHAUSTING 600 CFM EACH. THE BACKDRAFT DAMPER SHALL PROVIDE 600 CFM OF AIR WHILE ONLY ONE ASSOCIATED EXHAUST HOSE IS IN USE.
- PROVIDE HARDWARE, WIRING, PROGRAMMING, AND GRAPHICS TO THE BUILDING BAS.
- THE BLAST GATE DAMPER (BGD) SHALL BE MANUALLY BALANCED TO ENSURE THE PRESSURE AT POINT 1 IS ALWAYS NEGATIVE.

GENERAL EXHAUST DAMPER (GED)

- THE GENERAL EXHAUST DAMPER (GED) SHALL BE INITIALLY BALANCED FOR FULL GENERAL EXHAUST FLOW (AS SHOWN ON THE FLOOR PLANS) WITH ALL ASSOCIATED VES AND EHF FANS IN THE OFF POSITION.
- UNDER NORMAL OPERATION THE AIR FLOW MEASURING STATION (AFMS) SHALL MODULATE THE GENERAL EXHAUST DAMPER (GED) TO MAINTAIN THE CFM GENERAL EXHAUST FLOW (WHICH WAS INITIALLY BALANCED AS DESCRIBED ABOVE), LESS THE ANY/ALL (SEE FLOOR PLANS FOR SPECIFIC CASE) OF THE FOLLOWING TOTALS: 1) OPERATING VEHICLE EXHAUST SYSTEM (VES) 2) CONSTANT VOLUME WELDING HOODS 3) EXHAUST HOOD FAN (EHF). IN THE MAIN REPAIR BAY, THE EXHAUST AIR FLOW FROM THE MAIN REPAIR BAY SHALL BE OBTAINED BY TAKING THE AFMS READING IN THAT ZONE LESS ALL OTHER EXHAUST ZONES CURRENTLY IN OPERATION ON THE SAME EXHAUST MAIN.
- PROVIDE HARDWARE, WIRING, PROGRAMMING, AND GRAPHICS TO THE BUILDING BAS.

ACD AND ECD

- ACD SHALL BE NORMALLY OPEN. ECD SHALL BE NORMALLY CLOSED.
- UPON FAILURE OR SHUTDOWN OF THE MAIN EXHAUST FANS, EMERGENCY CONTROL DAMPER (ECD) SHALL OPEN, AUTOMATIC CONTROL DAMPER (ACD) SHALL SHUT. UPON MAIN EXHAUST FAN RE-START, DAMPERS SHALL RESUME NORMAL OPERATION.
- WHILE THE LOCAL VENTILATION FAN (VF) IS IN OPERATION THE ACD SHALL BE SHUT, AND ECD SHALL BE OPEN.

SAD - SUPPLY AIR DAMPER

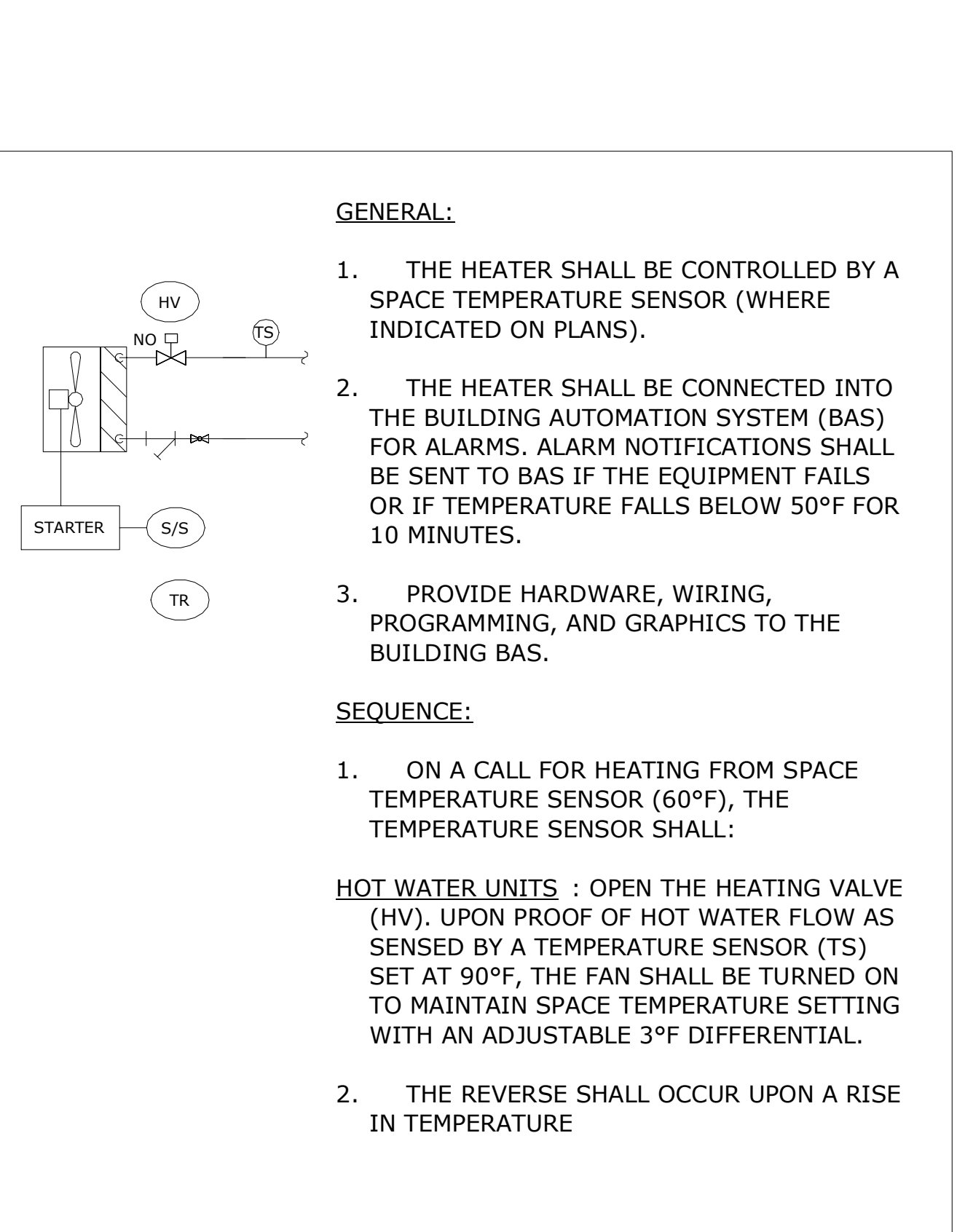
- WHILE ASSOCIATED VENTILATION FAN (VF) IS IN OPERATION, OR THE ZONE IS UNOCCUPIED AS DETERMINED BY OCCUPANCY SENSOR (OCC) THE SUPPLY AIR DAMPER (SUPPLY AIR) SHALL BE SHUT.
- UPON A ZONE BECOMING ACTIVE DUE TO OCCUPANCY OR NORMAL SCHEDULING, SAD SHALL MODULATE OPEN. AFMS SHALL MODULATE SAD TO MAINTAIN BALANCED AIRFLOW FOR THE ZONE AFFECTED.

VED - VEHICLE EXHAUST DAMPER (MAIN REPAIR BAY ONLY)

- WHILE THE VEHICLE EXHAUST SYSTEMS ARE NOT IN OPERATION, THE VEHICLE EXHAUST DAMPER SHALL BE SHUT.
- IF A VEHICLE EXHAUST SYSTEM FAN IS ON, AND THE ASSOCIATED ECD IS SHUT, VED SHALL MODULATE OPEN.

LOWER EXPLOSIVE LIMIT (LEL) SEQUENCE (CNG BAY ONLY)

- UPON LEL DETECTION. ASSOCIATED MED SHALL OPEN FULLY, AND SAD SHALL OPEN FULLY. ERU'S AND MAIN EXHAUST FANS SHALL PROVIDE/EVACUATE PURGE AIR AT ROOM BALANCE VALUE UNTIL LEL HAS BEEN SILENCED.



GENERAL:

- THE HEATER SHALL BE CONTROLLED BY A SPACE TEMPERATURE SENSOR (WHERE INDICATED ON PLANS).
- THE HEATER SHALL BE CONNECTED INTO THE BUILDING AUTOMATION SYSTEM (BAS) FOR ALARMS. ALARM NOTIFICATIONS SHALL BE SENT TO BAS IF THE EQUIPMENT FAILS OR IF TEMPERATURE FALLS BELOW 50°F FOR 10 MINUTES.
- PROVIDE HARDWARE, WIRING, PROGRAMMING, AND GRAPHICS TO THE BUILDING BAS.

SEQUENCE:

- ON A CALL FOR HEATING FROM SPACE TEMPERATURE SENSOR (60°F), THE TEMPERATURE SENSOR SHALL:  
  
**HOT WATER UNITS** : OPEN THE HEATING VALVE (HV). UPON PROOF OF HOT WATER FLOW AS SENSED BY A TEMPERATURE SENSOR (TS) SET AT 90°F, THE FAN SHALL BE TURNED ON TO MAINTAIN SPACE TEMPERATURE SETTING WITH AN ADJUSTABLE 3°F DIFFERENTIAL.
- THE REVERSE SHALL OCCUR UPON A RISE IN TEMPERATURE

RDK

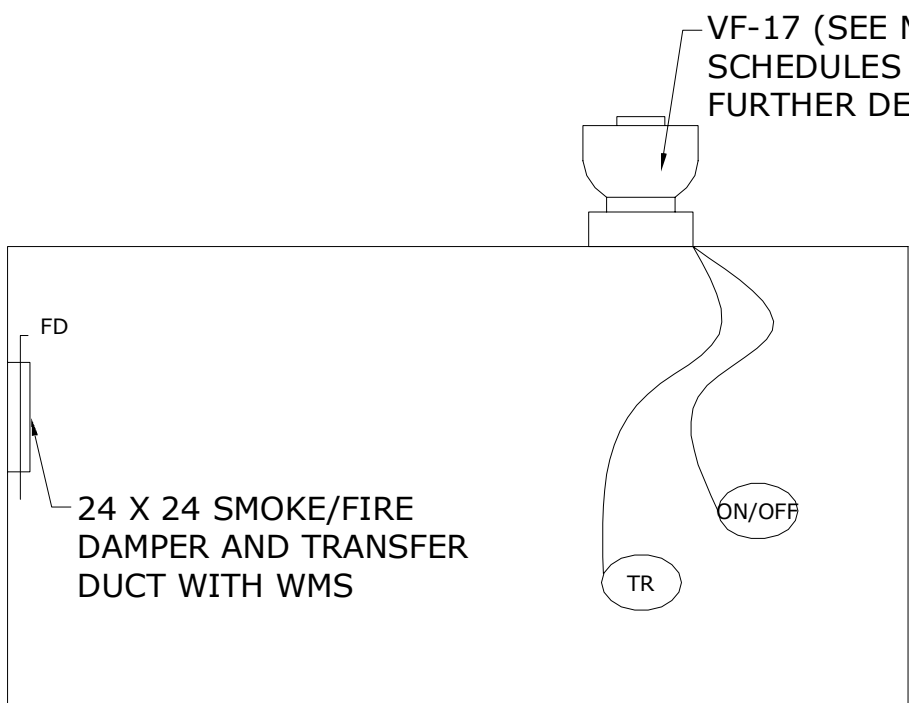
EXHAUST SYSTEMS SEQUENCE OF OPERATION  
(CNG INSPECTION, LUBE BAYS, WELDING, MAIN REPAIR BAYS, AERIAL BUCKET)

VES01

RDK

HEATER (CUH)  
SEQUENCE OF OPERATION

HC802



GENERAL:

- THE FAN SHALL BE CONTROLLABLE BY ROOM LOCAL ON/OFF SWITCH, BMS, OR T-STAT.

CONTROLS SEQUENCE

- IF TR IS GREATER THAN 70 DEGREES. FAN SHALL RUN.
- UPON A DROP IN TEMPERATURE BELOW TR SET POINT. FAN SHALL TURN OFF.
- UPON FAILURE TO START, AN ALARM SHALL BE SENT TO THE FRONT END.

RDK

VF-7 SEQUENCE OF OPERATION

HC803

GENERAL:

- THE HEATER FAN SHALL BE CONTROLLED BY A SPACE TEMPERATURE SENSOR (WHERE INDICATED ON PLANS).
- THE HEATER SHALL BE CONNECTED INTO THE BUILDING AUTOMATION SYSTEM (BAS) FOR ALARMS. ALARM NOTIFICATIONS SHALL BE SENT TO BAS IF THE EQUIPMENT FAILS OR IF TEMPERATURE FALLS BELOW 50°F FOR 10 MINUTES.
- PROVIDE HARDWARE, WIRING, PROGRAMMING, AND GRAPHICS TO THE BUILDING BAS.
- WHERE APPLICABLE THE HEATER SPACE TEMPERATURE SENSOR CAN ALSO CONTROL RADIANT FLOOR HEATING.
- UNIT HEATERS AND RADIANT HEATING SHALL BE LOCKED OUT DURING VENTILATION FAN OPERATION ABOVE 65°F OUTDOOR AIR TEMPERATURE.

SEQUENCE:

- ON A CALL FOR HEATING FROM SPACE TEMPERATURE SENSOR (60°F), THE TEMPERATURE SENSOR SHALL:

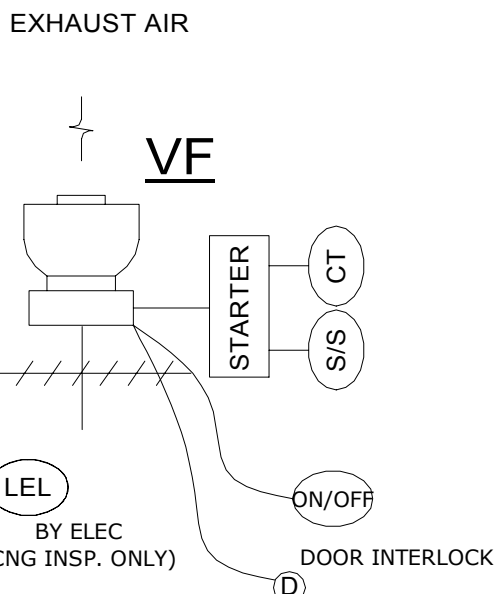
HOT WATER UNITS :

- THE FAN SHALL BE TURNED ON TO MAINTAIN SPACE TEMPERATURE SETTING WITH AN ADJUSTABLE 3°F DIFFERENTIAL.
- THE REVERSE SHALL OCCUR UPON A RISE IN TEMPERATURE
- UPON AN ASSOCIATED GARAGE DOOR BEING OPEN FOR 10 MINS (ADJ). THE BMS SHALL SHUT THE UH FAN OFF. UPON GARAGE DOOR BEING CLOSED THE UH FAN SHALL RESET TO NORMAL OPERATION. THIS SHALL BE TYPICAL OF ALL AREAS EXCEPT THE MAIN REPAIR BAYS WHERE UH FANS WILL RUN CONSTANTLY OFF OF SPACE TEMPERATURE.
- CNG BAY ONLY - UPON ACTIVATION OF LEL ALL UH'S IN CNG BAY SHALL SHUT DOWN.

RDK

HEATER (UH)  
SEQUENCE OF OPERATION

HC801



VENTILATION FAN - SEQUENCE OF OPERATION

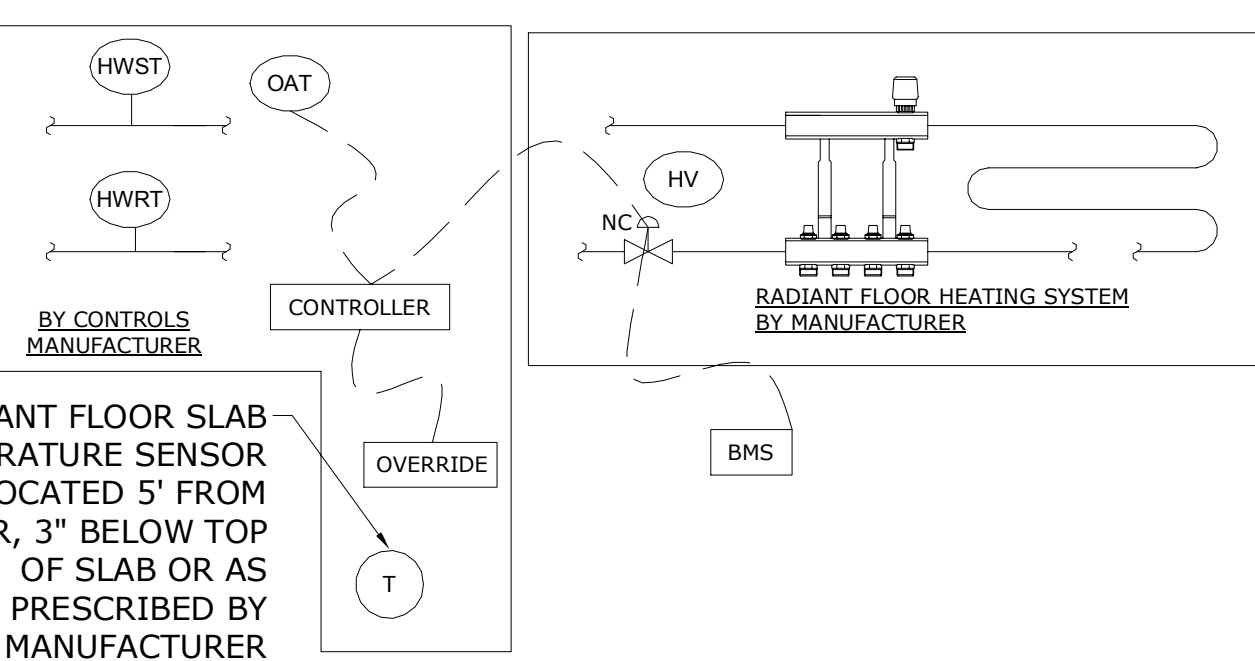
FAN CONTROLS

- FAN SYSTEM SHALL BE CONTROLLED BY THE DDC SYSTEM OR ROOM MOUNTED ON/OFF SWITCH.
- PROVIDE FAN FAILURE ALARM (CT) AND HIGH TEMP ALARM AT 104°F (FOR 10 MINUTES).
- DAMPER SHALL BE RUSKIN CD51 LOW-LEAKAGE TYPE, OR APPROVED EQUAL.
- UNIT HEATERS AND RADIANT HEATING SHALL BE LOCKED OUT DURING VENTILATION FAN OPERATION ABOVE 65°F OUTDOOR AIR TEMPERATURE. LOCAL ROOM MOUNTED ON/OFF SWITCH SHALL ALLOW USER TO TURN FAN ON. WHEN SWITCH IS IN THE ON POSITION OR GARAGE DOOR BEING OPENED, THE OAD SHALL OPEN AND THE VF SHALL START. UPON SWITCH BEING IN THE OFF POSITION THE REVERSE SHALL OCCUR.
- EACH FAN SHALL BE TIED TO A DOOR INTERLOCK. WHEN THE ASSOCIATED DOOR IS OPEN, THE FAN SHALL BE ON. THE FAN SHALL BE OFF WHEN THE DOOR IS CLOSED.
- CNG INSPECTION BAY ONLY) UPON LEL DETECTION. OAD SHALL OPEN AND VF SHALL RUN AT FULL SPEED UNTIL LEL IS SILENCED OR MANUALLY OVERRIDDEN.

RDK

VENTILATION FAN (VF)  
CONTROL SEQUENCES

HC503



RADIANT FLOOR SLAB TEMPERATURE SENSOR LOCATED 5' FROM PERIMETER, 3" BELOW TOP OF SLAB OR AS PRESCRIBED BY MANUFACTURER

GENERAL

- RADIANT FLOOR HEATING SHALL BE CONTROLLED BY AN APPLICATION SPECIFIC CONTROLLER (ASC). COORDINATE OCCUPIED/UNOCCUPIED SCHEDULES WITH OWNER. ALL SETPOINTS SHALL BE ADJUSTABLE. ALL ACTUATORS SHALL BE ELECTRONIC.
- ALL TEMPERATURES LISTED ARE FAHRENHEIT AND SHALL BE ADJUSTABLE.
- MANIFOLD SHALL BE BALANCED TO PROVIDE FOR EVEN FLOW THROUGH EACH INDIVIDUAL PIPE RUN.
- RADIANT HEATING SHALL BE LOCKED OUT DURING VENTILATION FAN OPERATION ABOVE 65°F (ADJ) OUTDOOR AIR TEMPERATURE.

CONTROL VALVE CONTROL

- CONTROL VALVE SHALL MODULATE OPEN TO MAINTAIN SLAB TEMPERATURE SETPOINT (ADJ.). INITIALLY THE SLAB TEMPERATURE SHALL BE SET MAINTAIN 70°F WHEN THE OUTDOOR AIR IS BELOW 54°F. AT OUTDOOR AIR TEMPERATURES ABOVE 55°F THE VALVE SHALL BE SHUT AND CIRCULATING PUMP (HWP-3) SHALL BE OFF.
- CONTROL VALVE SHALL MODULATE OPEN WHEN COMMANDED BY SLAB TEMPERATURE SENSOR PROVIDED EXCLUSIVELY FOR RADIANT FLOORING OR BY BAS SETPOINT DEPENDENT ON OUTDOOR AIR TEMPERATURE (OAT) WITH AN INITIAL SET POINT OF 54°F (ADJ.) OR BY LOCAL OVERRIDE.

RDK

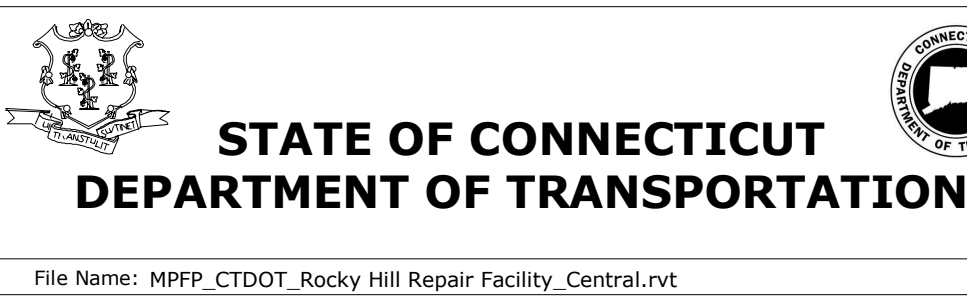
RADIANT FLOOR CONTROLS  
SEQUENCES

FCUV-1

NO.	Revision Description	Date

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.

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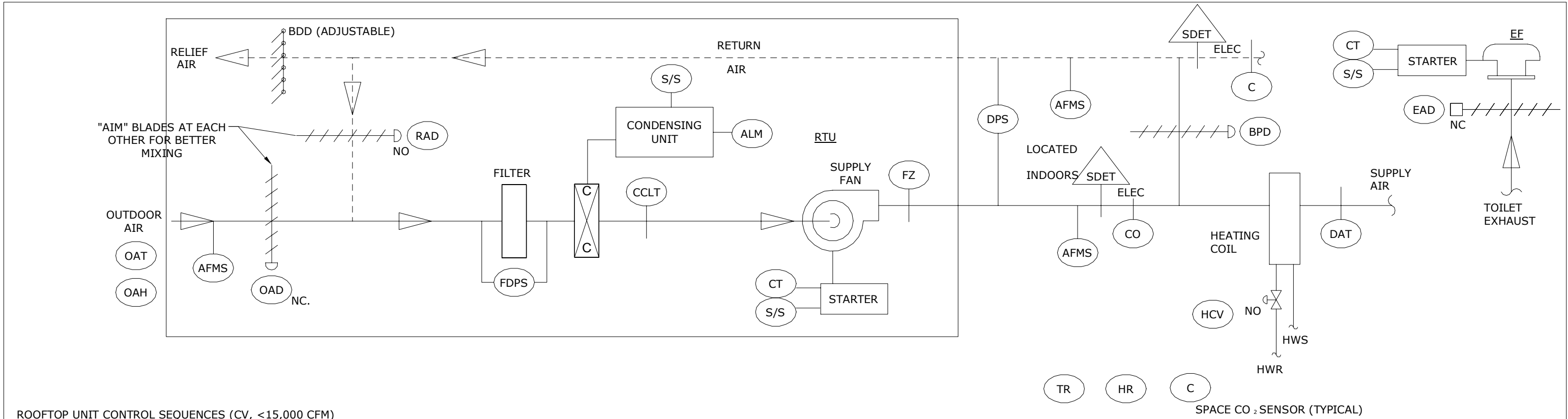
SIGNATURE/BLOCK:

PROJECT TITLE  
**REPAIR FACILITY**

TOWN  
**ROCKY HILL**  
DRAWING TITLE  
**MECHANICAL CONTROLS III**

PROJECT NO.  
**118-0167**  
DRAWING NO.  
**MEC-502**  
SHEET NO.  
**10.30**





ROOFTOP UNIT CONTROL SEQUENCES (CV, <15,000 CFM)

ROOF TOP UNIT CONTROLS

GENERAL

1. ROOFTOP UNIT AND EXHAUST FAN SHALL BE STARTED AND STOPPED VIA DDC CONTROLLER. COORDINATE OCCUPIED AND UNOCCUPIED SCHEDULES WITH OWNER. ALL SETPOINTS SHALL BE ADJUSTABLE. ALL ACTUATORS SHALL BE ELECTRONIC.
2. LOCAL HAND-OFF-AUTOMATIC SWITCH (H-O-A) FOR FANS SHALL OVERRIDE DDC START/STOP (S/S) COMMANDS. ALL HARDWIRED SAFETIES SHALL BE ACTIVE IN BOTH "H" AND "A" POSITIONS.
3. ALL TEMPERATURES LISTED ARE FAHRENHEIT.
4. ALL TEMPERATURE SENSORS IN THE UNIT AND DUCTWORK SHALL BE AVERAGING TYPE EXCEPT FOR FREEZESTATS WHICH SHALL BE LOW POINT READING TYPE.
5. PROVIDE APPROPRIATE ANTI-RECYCLE TIME DELAYS AND SAFETIES ON COMPRESSOR AND GAS HEATER STAGING.

FAN CONTROL

1. WHILE IN UNOCCUPIED MODE (OR OFF ON SAFETY OR MANUAL DISCONNECT) THE SUPPLY AND EXHAUST FAN (EF) SHALL BE OFF WITH THE OUTSIDE AIR DAMPER (OAD) AND EXHAUST AIR DAMPER (EAD) CLOSED, THE CONDENSING UNIT AND GAS HEATER OFF, AND THE RETURN AIR DAMPER (RAD) OPEN.
2. WHEN STARTED IN OCCUPIED MODE, THE SUPPLY FAN SHALL START IN RECIRCULATION MODE, THEN THE OAD AND RAD SHALL OPEN TO THE MINIMUM OUTDOOR AIR POSITION AS CONTROLLED BY AIR FLOW MONITORING STATION (AFMS - SEE CO2 CONTROL), THE EAD SHALL OPEN, AND THE EXHAUST FAN (EF) SHALL START.

OCCUPIED CARBON DIOXIDE CONTROL

1. THE ACTUAL MINIMUM OUTDOOR AIRFLOW SHALL VARY BETWEEN 40% AND 100% OF THE SCHEDULED MINIMUM OUTDOOR AIR VOLUME. NORMAL MINIMUM OUTDOOR AIR (OA) QUANTITY SHALL BE CONTROLLED BY THE OUTDOOR AIR AFMS TO 40% OF THE SCHEDULED MINIMUM OA. IF EITHER OF THE FOLLOWING OCCURS, THE OUTDOOR AIR AFMS SHALL SLOWLY MODULATE THE OAD AND RAD AS REQUIRED TO MAINTAIN THE MAXIMUM CO2 WITHIN 50 PPM OF THE LISTED LIMIT:
  - a. IF ANY VARIABLE OCCUPANCY SPACE CO2 SENSOR SERVED
2. BY THE UNIT RISES ABOVE THE LIMIT OF 1200 PPM FOR 5 MINUTES.
3. IF THE RETURN AIR CO2 LEVEL AT SENSOR (C) RISES

OCCUPIED MODE

1. DURING OCCUPIED PERIODS, THE SUPPLY FAN SHALL RUN CONTINUOUSLY AND THE OUTSIDE AIR DAMPER SHALL OPEN TO MAINTAIN MINIMUM VENTILATION REQUIREMENTS UNLESS THE DEMAND VENTILATION OR ECONOMIZING SEQUENCES ARE ACTIVE. THE RETURN DAMPER WILL BE INVERSELY INTERLOCKED WITH THE OUTDOOR AIR DAMPER.
2. THE DX COOLING SHALL STAGE AND HOT WATER HEAT SHALL MODULATE TO MAINTAIN THE CURRENT DISCHARGE AIR TEMPERATURE SETPOINT COMPARED TO A SPACE SETPOINT AND THE AMOUNT OF HEAT OR COOL CALLS. IF ECONOMIZING IS ENABLED THE OUTSIDE AIR DAMPER SHALL MODULATE TO MAINTAIN THE CURRENT DISCHARGE AIR TEMPERATURE SETPOINT.
3. THE SUPPLY AIR SENSOR SHALL MEASURE THE DRY BULB TEMPERATURE OF THE AIR LEAVING THE EVAPORATOR COIL WHILE ECONOMIZING. WHEN ECONOMIZING IS ENABLED AND THE UNIT IS OPERATING IN THE COOLING IF THE OUTSIDE AIR ENTHALPY RISES ABOVE THE ROOM AIR ENTHALPY THE ECONOMIZER SHALL BE POSITIONED TO PROVIDE MINIMUM OUTDOOR AIRFLOW AND THE CONDENSING UNIT STAGED TO MAINTAIN ROOM COOLING SETPOINT TEMPERATURE. DAT SHALL LIMIT SUPPLY AIR TO 48°F MINIMUM, DURING MECHANICAL COOLING.
4. THE TRACER SC WILL POLL THE SPACE SENSORS AND COMPARE THE TEMPERATURES WITH ITS INDIVIDUAL SETPOINT TEMPERATURES (ADJUSTABLE).
5. IF THE MAJORITY OF THE SPACE REQUIRES COOLING THE RTU WILL ENABLE THE D/X COOLING TO START. THE D/X COOLING WILL REMAIN "ON" UNTIL THE SPACE SENSORS REACH SETPOINT, AT WHICH TIME THE RTU WILL CYCLE THE D/X COOLING TO "OFF".
6. IF THE MAJORITY OF THE SPACE REQUIRES HEATING THE RTU WILL ENABLE THE HOT WATER HEATING COIL AND MODULATE HEATING COIL VALVE (HCV) AS REQUIRED TO MAINTAIN DISCHARGE AIR TEMP (DAT). THE HEAT WILL REMAIN "ON" UNTIL THE SPACE SENSORS REACH SETPOINT, AT WHICH TIME THE RTU WILL CYCLE "OFF".

OCCUPIED BYPASS:

1. THE BAS SHALL MONITOR THE STATUS OF THE "ON" AND "CANCEL" BUTTONS OF THE SPACE TEMPERATURE SENSORS. WHEN AN OCCUPIED BYPASS REQUEST IS RECEIVED FROM A SPACE SENSOR, THE UNIT SHALL TRANSITION FROM ITS CURRENT OCCUPANCY MODE TO OCCUPIED BYPASS MODE AND THE UNIT SHALL MAINTAIN THE SPACE TEMPERATURE TO THE OCCUPIED SETPOINTS (ADJ.).

BYPASS DAMPER CONTROL

1. WHEN THE SUPPLY FAN IS ON, THE BYPASS DAMPER (BPD) WILL SLOWLY OPEN, AND MODULATE TO MAINTAIN THE PROPER DISCHARGE DUCT STATIC PRESSURE SETPOINT AS DETERMINED BY (DPS). DETERMINATION OF THE DISCHARGE DUCT STATIC PRESSURE SETPOINT WILL BE PER THE DISCHARGE DUCT STATIC PRESSURE SETPOINT SECTION OF THE RTU SYSTEM LEVEL OPERATION SECTION OF THIS SEQUENCE.

UNOCCUPIED CONTROL

1. WHEN THE AVERAGE SPACE TEMPERATURE IS BELOW THE UNOCCUPIED HEATING SETPOINT OF 60.0 DEG. F (ADJ.) THE SUPPLY FAN SHALL OPERATE, THE OUTSIDE AIR DAMPER SHALL REMAIN CLOSED AND THE HEATING COIL VALVE (HCV) SHALL BE ENABLED.
2. WHEN THE AVERAGE SPACE TEMPERATURE RISES ABOVE THE UNOCCUPIED HEATING SETPOINT OF 60.0 DEG. F (ADJ.) PLUS THE UNOCCUPIED DIFFERENTIAL OF 4.0 DEG. F (ADJ.) THE SUPPLY FAN SHALL STOP AND THE HEATING COIL SHALL BE DISABLED.
3. WHEN THE AVERAGE SPACE TEMPERATURE IS ABOVE THE UNOCCUPIED COOLING SETPOINT OF 85.0 DEG. F (ADJ.) THE SUPPLY FAN, THE OUTSIDE AIR DAMPER SHALL OPEN IF ECONOMIZING IS ENABLED AND REMAIN CLOSED IF ECONOMIZING IS DISABLED AND THE DX COOLING SHALL BE ENABLED.
4. WHEN THE AVERAGE SPACE TEMPERATURE FALLS BELOW THE UNOCCUPIED COOLING SETPOINT OF 85.0 DEG. F (ADJ.) MINUS THE UNOCCUPIED DIFFERENTIAL OF 4.0 DEG. F (ADJ.) THE SUPPLY FAN SHALL STOP, THE DX COOLING SHALL BE DISABLED AND THE OUTSIDE AIR DAMPER SHALL CLOSE.

WARM-UP CONTROL

1. DDC CONTROLLER SHALL PROVIDE OPTIMUM START CAPABILITY. IF SPACE TEMPERATURE IS BELOW 63°F, WARM-UP SHALL BE DONE WITH RAD OPEN, OAD CLOSED, AND GAS HEATER CONTROLLED BY DAT TO SUPPLY 90°F AIR. WHEN ROOM TEMPERATURE RISES ABOVE 69°F, OCCUPIED MODE SHALL START. EF SHALL REMAIN OFF WITH EAD CLOSED.

SAFETIES

1. IN ADDITION TO THE CO SAFETY SHOWN ABOVE ( FOR BUILDINGS WITH RESIDENTIAL UNITS), THE FOLLOWING SAFETIES EACH WITH ITS OWN MANUAL RESET BUTTON, SHALL SHUT DOWN THE UNIT VIA HARDWARE BEFORE H-O-A.
  - a. ANY FREEZESTAT (FZ) SHALL SHUTDOWN THE UNIT WHENEVER THE TEMPERATURE IS LESS THAN 35°F.
  - b. WHEN ANY SMOKE DETECTOR (SDET) IS ACTIVATED THE UNIT SHALL SHUT DOWN.

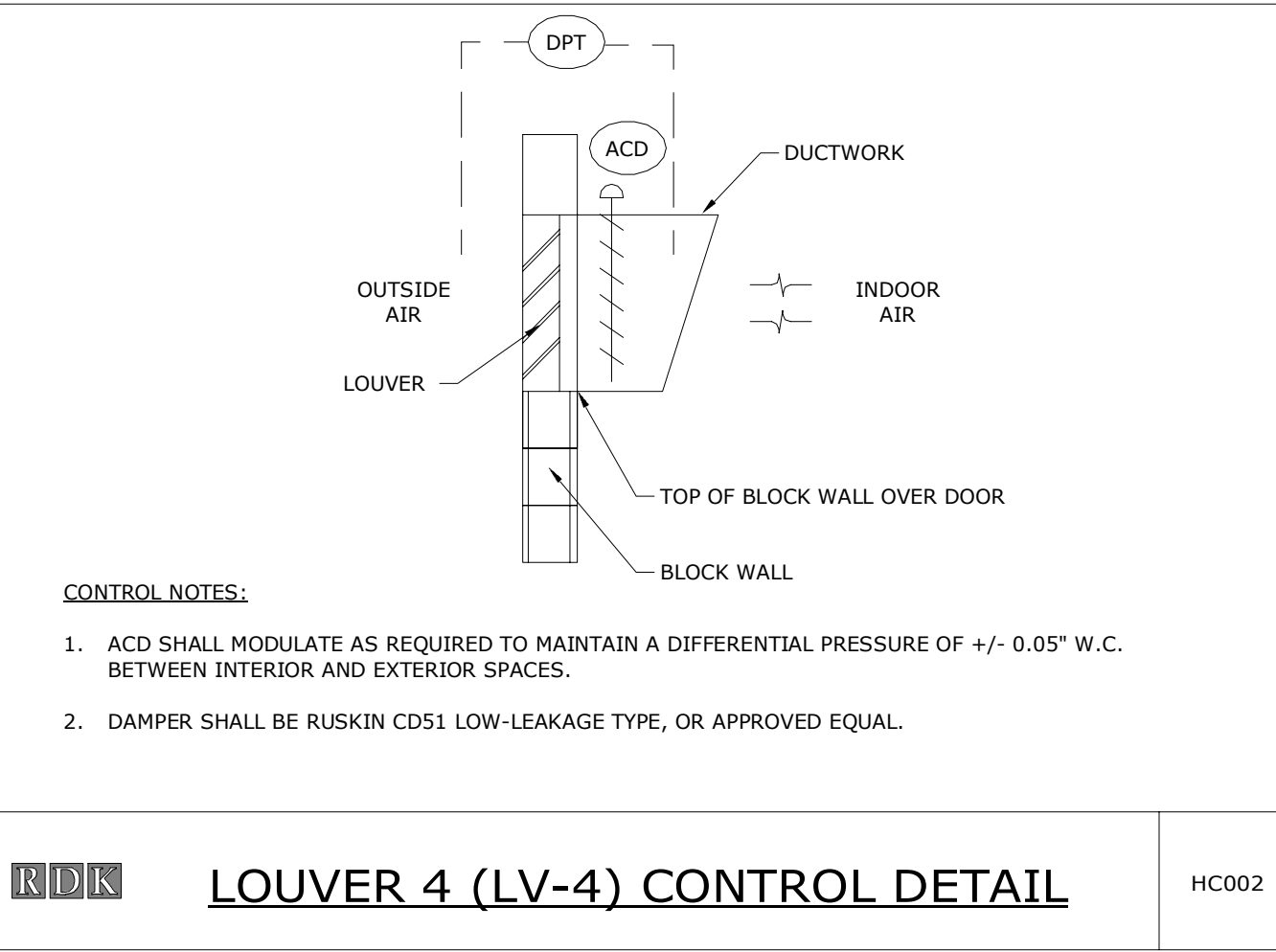
ALARMS

1. IF EITHER THE SUPPLY OR EXHAUST FAN FAILS OR IF ANY SAFETY IS TRIPPED, THE DDC CONTROLLER SHALL GIVE A DETAILED ALARM SIGNAL TO THE FRONT END.
2. IF FILTER PRESSURE DROP EXCEEDS SETPOINT (INITIALLY 0.6") FOR 10 MINUTES, THE DDC CONTROLLER SHALL GIVE A DETAILED ALARM SIGNAL TO THE FRONT END.



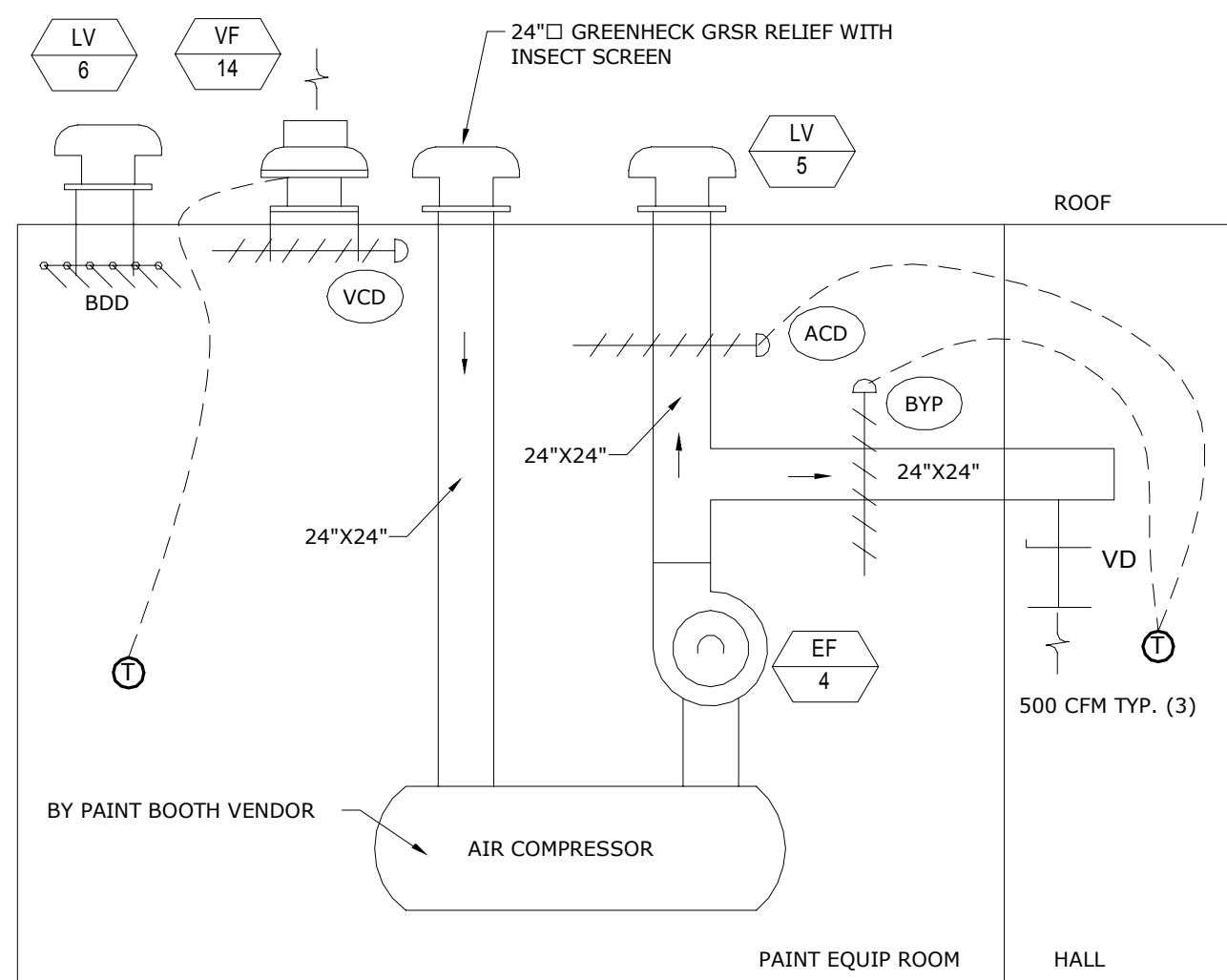
ROOFTOP UNIT CONTROL SEQUENCES (CV, <15,000 CFM)

HC002



LOUVER 4 (LV-4) CONTROL DETAIL

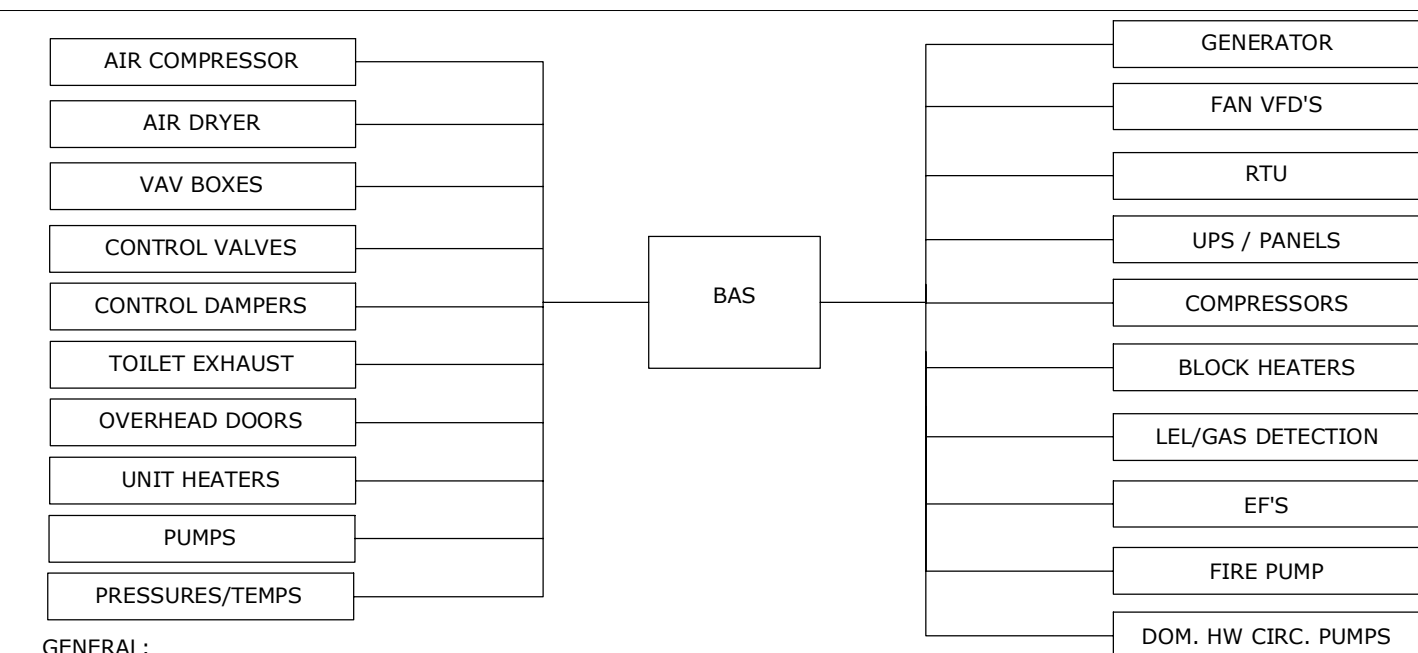
HC002



- CONTROL NOTES:
1. UPON A RISE IN OUTDOOR AIR TEMPERATURE ABOVE 65°F BYP SHALL MODULATE CLOSED AND ACD SHALL OPEN.
  2. T-STAT IN HALLWAY SHALL MODULATE DAMPERS TO MAINTAIN SPACE TEMPERATURE SET POINT.
  3. WHILE AIR COMPRESSOR IS ON, EXHAUST FAN (EF-4) SHALL RUN AT BALANCED VALUE OF 3,000 CFM
  4. WHEN PAINT EQUIP ROOM TEMP EXCEEDS 70°F (ADJ.) VENTILATION CONTROL DAMPER (VCD) SHALL OPEN, FAN SHALL RUN TO MAINTAIN TEMPERATURE SET POINT. UPON A DROP IN TEMPERATURE BELOW 70°F (ADJ.), VCD SHALL SHUT AND FAN SHALL TURN OFF.

PAINT EQUIP ROOM CONTROLS

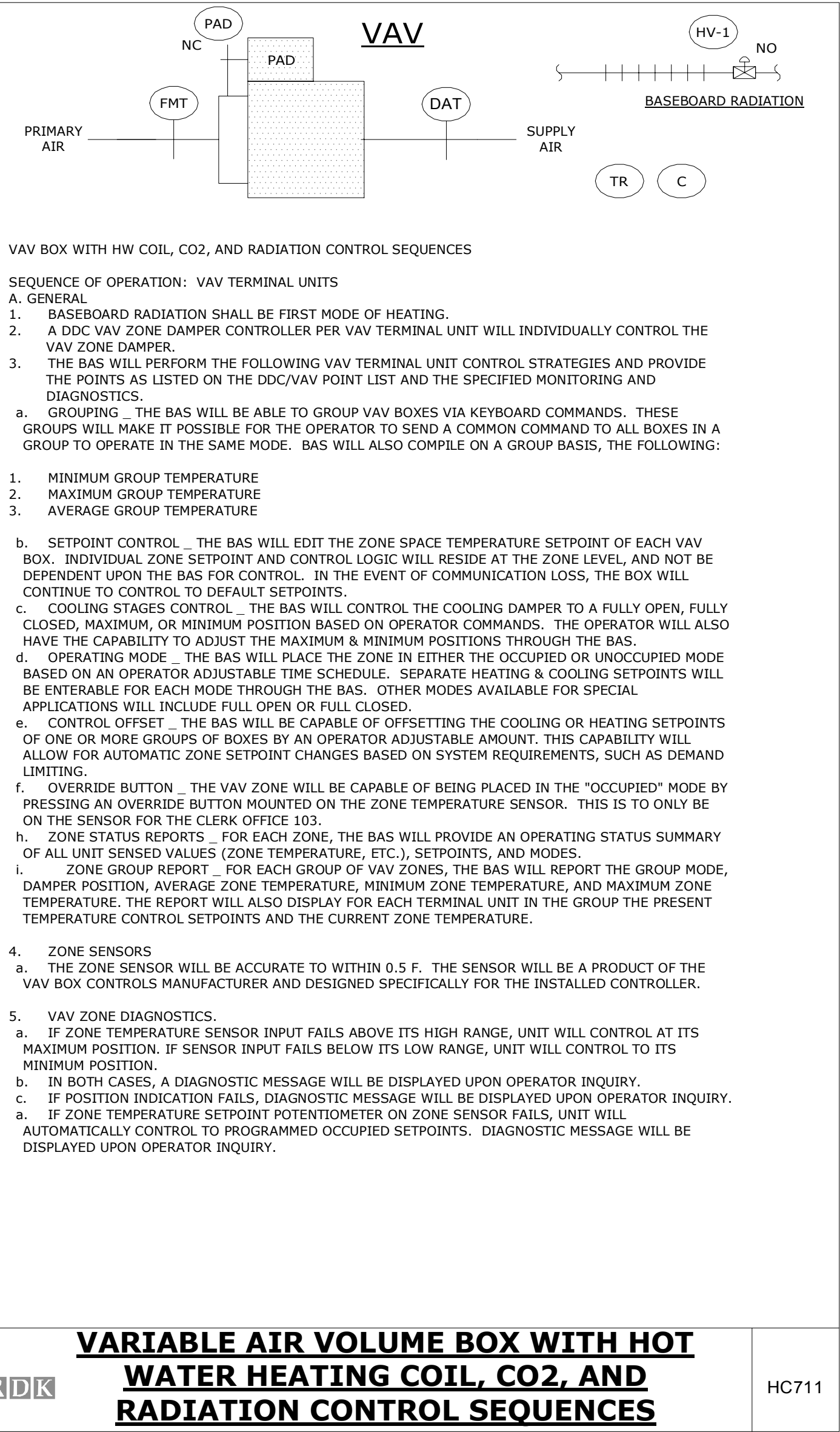
HC002



- GENERAL:
1. REFER TO CONTROLS SEQUENCES ON PLUMBING, FIRE PROTECTION, HVAC, AND ELECTRICAL PLANS FOR ADDITIONAL POINTS AND DETAILS. HVAC CONTROLS CONTRACTOR RESPONSIBLE FOR ALL HARDWARE AND SOFTWARE NECESSARY FOR MONITORING OF POINTS LISTED ABOVE AND IN CONTROLS SEQUENCES.
  2. ALL POINTS SHALL MONITOR START, STOP AND STATUS.
  3. ALL POINTS SHALL BE TRENDABLE AND ACCESSIBLE THRU BAS.
  4. TERMS BAS - BUILDING AUTOMATION SYSTEM, AND BMS- BUILDING MANAGEMENT SYSTEM SHALL BE INTERCHANGEABLE

ADDITIONAL BAS CONTROL POINTS

HC893



VAV BOX WITH HW COIL, CO2, AND RADIATION CONTROL SEQUENCES

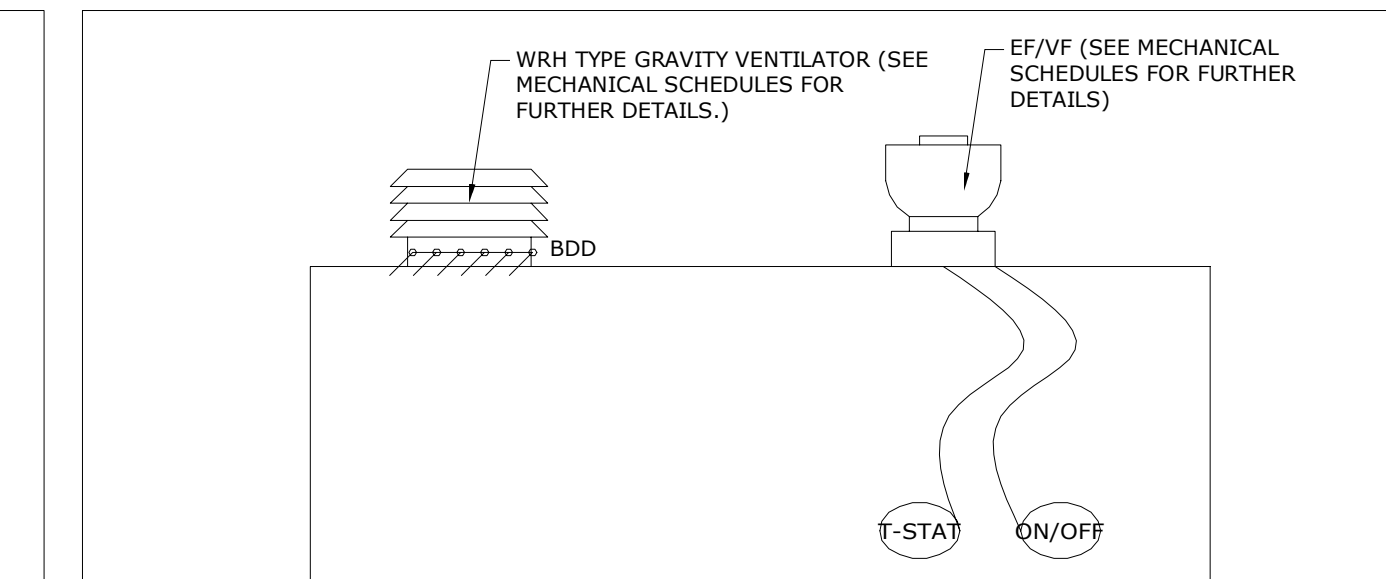
SEQUENCE OF OPERATION: VAV TERMINAL UNITS

- A. GENERAL
1. BASEBOARD RADIATION SHALL BE FIRST MODE OF HEATING.
  2. A DDC VAV ZONE DAMPER CONTROLLER PER VAV TERMINAL UNIT WILL INDIVIDUALLY CONTROL THE VAV ZONE DAMPER.
  3. THE BAS WILL PERFORM THE FOLLOWING VAV TERMINAL UNIT CONTROL STRATEGIES AND PROVIDE THE POINTS AS LISTED ON THE DDC/VAV POINT LIST AND THE SPECIFIED MONITORING AND DIAGNOSTICS.
    - a. GROUPING - THE BAS WILL BE ABLE TO GROUP VAV BOXES VIA KEYBOARD COMMANDS. THESE GROUPS WILL MAKE IT POSSIBLE FOR THE OPERATOR TO SEND A COMMON COMMAND TO ALL BOXES IN A GROUP TO OPERATE IN THE SAME MODE. BAS WILL ALSO COMPILE ON A GROUP BASIS, THE FOLLOWING:
      1. MINIMUM GROUP TEMPERATURE
      2. MAXIMUM GROUP TEMPERATURE
      3. AVERAGE GROUP TEMPERATURE
    - b. SETPOINT CONTROL - THE BAS WILL EDIT THE ZONE SPACE TEMPERATURE SETPOINT OF EACH VAV BOX. INDIVIDUAL ZONE SETPOINT AND CONTROL LOGIC WILL RESIDE AT THE ZONE LEVEL, AND NOT BE DEPENDENT UPON THE BAS FOR CONTROL. IN THE EVENT OF COMMUNICATION LOSS, THE BOX WILL CONTINUE TO CONTROL TO DEFAULT SETPOINTS.
    - c. COOLING STAGES CONTROL - THE BAS WILL CONTROL THE COOLING DAMPER TO A FULLY OPEN, FULLY CLOSED, MAXIMUM, OR MINIMUM POSITION BASED ON OPERATOR COMMANDS. THE OPERATOR WILL ALSO HAVE THE CAPABILITY TO ADJUST THE MAXIMUM & MINIMUM POSITIONS THROUGH THE BAS.
    - d. OPERATING MODE - THE BAS WILL PLACE THE ZONE IN EITHER THE OCCUPIED OR UNOCCUPIED MODE BASED ON AN OPERATOR ADJUSTABLE TIME SCHEDULE. SEPARATE HEATING & COOLING SETPOINTS WILL BE ENTERABLE FOR EACH MODE THROUGH THE BAS. OTHER MODES AVAILABLE FOR SPECIAL APPLICATIONS WILL INCLUDE FULL OPEN OR FULL CLOSED.
    - e. CONTROL OFFSET - THE BAS WILL BE CAPABLE OF OFFSETTING THE COOLING OR HEATING SETPOINTS OF ONE OR MORE GROUPS OF BOXES BY AN OPERATOR ADJUSTABLE AMOUNT. THIS CAPABILITY WILL ALLOW FOR AUTOMATIC ZONE SETPOINT CHANGES BASED ON SYSTEM REQUIREMENTS, SUCH AS DEMAND LIMITING.
    - f. OVERRIDE BUTTON - THE VAV ZONE WILL BE CAPABLE OF BEING PLACED IN THE "OCCUPIED" MODE BY PRESSING AN OVERRIDE BUTTON MOUNTED ON THE ZONE TEMPERATURE SENSOR. THIS IS TO ONLY BE ON THE SENSOR FOR THE CLERK OFFICE 103.
    - h. ZONE STATUS REPORTS - FOR EACH ZONE, THE BAS WILL PROVIDE AN OPERATING STATUS SUMMARY OF ALL UNIT SENSED VALUES (ZONE TEMPERATURE, ETC.), SETPOINTS, AND MODES.
    - i. ZONE GROUP REPORT - FOR EACH GROUP OF VAV ZONES, THE BAS WILL REPORT THE GROUP MODE, DAMPER POSITION, AVERAGE ZONE TEMPERATURE, MINIMUM ZONE TEMPERATURE, AND MAXIMUM ZONE TEMPERATURE. THE REPORT WILL ALSO DISPLAY FOR EACH TERMINAL UNIT IN THE GROUP THE PRESENT TEMPERATURE CONTROL SETPOINTS AND THE CURRENT ZONE TEMPERATURE.

4. ZONE SENSORS
  - a. THE ZONE SENSOR WILL BE ACCURATE TO WITHIN 0.5 F. THE SENSOR WILL BE A PRODUCT OF THE VAV BOX CONTROLS MANUFACTURER AND DESIGNED SPECIFICALLY FOR THE INSTALLED CONTROLLER.
  5. VAV ZONE DIAGNOSTICS.
    - a. IF ZONE TEMPERATURE SENSOR INPUT FAILS ABOVE ITS HIGH RANGE, UNIT WILL CONTROL AT ITS MAXIMUM POSITION. IF SENSOR INPUT FAILS BELOW ITS LOW RANGE, UNIT WILL CONTROL TO ITS MINIMUM POSITION.
    - b. IN BOTH CASES, A DIAGNOSTIC MESSAGE WILL BE DISPLAYED UPON OPERATOR INQUIRY.
    - c. IF POSITION INDICATION FAILS, DIAGNOSTIC MESSAGE WILL BE DISPLAYED UPON OPERATOR INQUIRY.
    - d. IF ZONE TEMPERATURE SETPOINT POTENTIOMETER ON ZONE SENSOR FAILS, UNIT WILL AUTOMATICALLY CONTROL TO PROGRAMMED OCCUPIED SETPOINTS. DIAGNOSTIC MESSAGE WILL BE DISPLAYED UPON OPERATOR INQUIRY.

VARIABLE AIR VOLUME BOX WITH HOT WATER HEATING COIL, CO2, AND RADIATION CONTROL SEQUENCES

HC711



GENERAL:

TYPICAL FOR LV-1, 2,3,6 AND EF-3,EF-5,VF-13,VF-14

1. THE FAN SHALL BE CONTROLLED BY ROOM LOCAL ON/OFF SWITCH AND T-STAT.

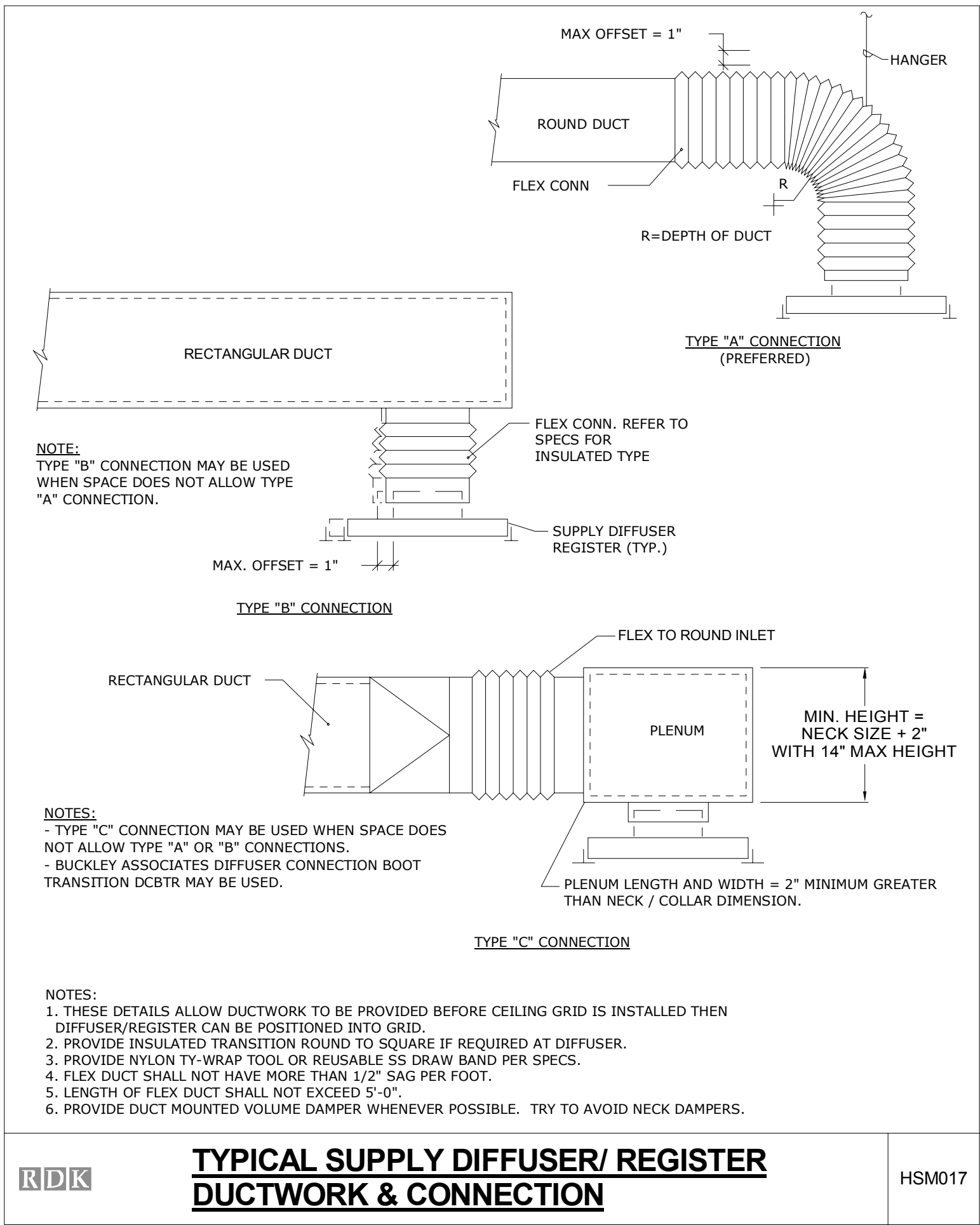
GRAVITY VENTILATOR / EF / VF CONTROL SEQUENCE OF OPERATION

HC803

				DESIGNER/DRAFTER <b>WJS</b>	 <b>STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION</b> File Name: MPPP_CTDOT_Rocky Hill Repair Facility_Central.rvt
				CHECKED BY: <b>TFC</b>	
				SCALE <b>1/8" = 1'-0"</b>	
NO.	Revision Description	Date	Plotted: 10/21/2014 3:31:58 PM		

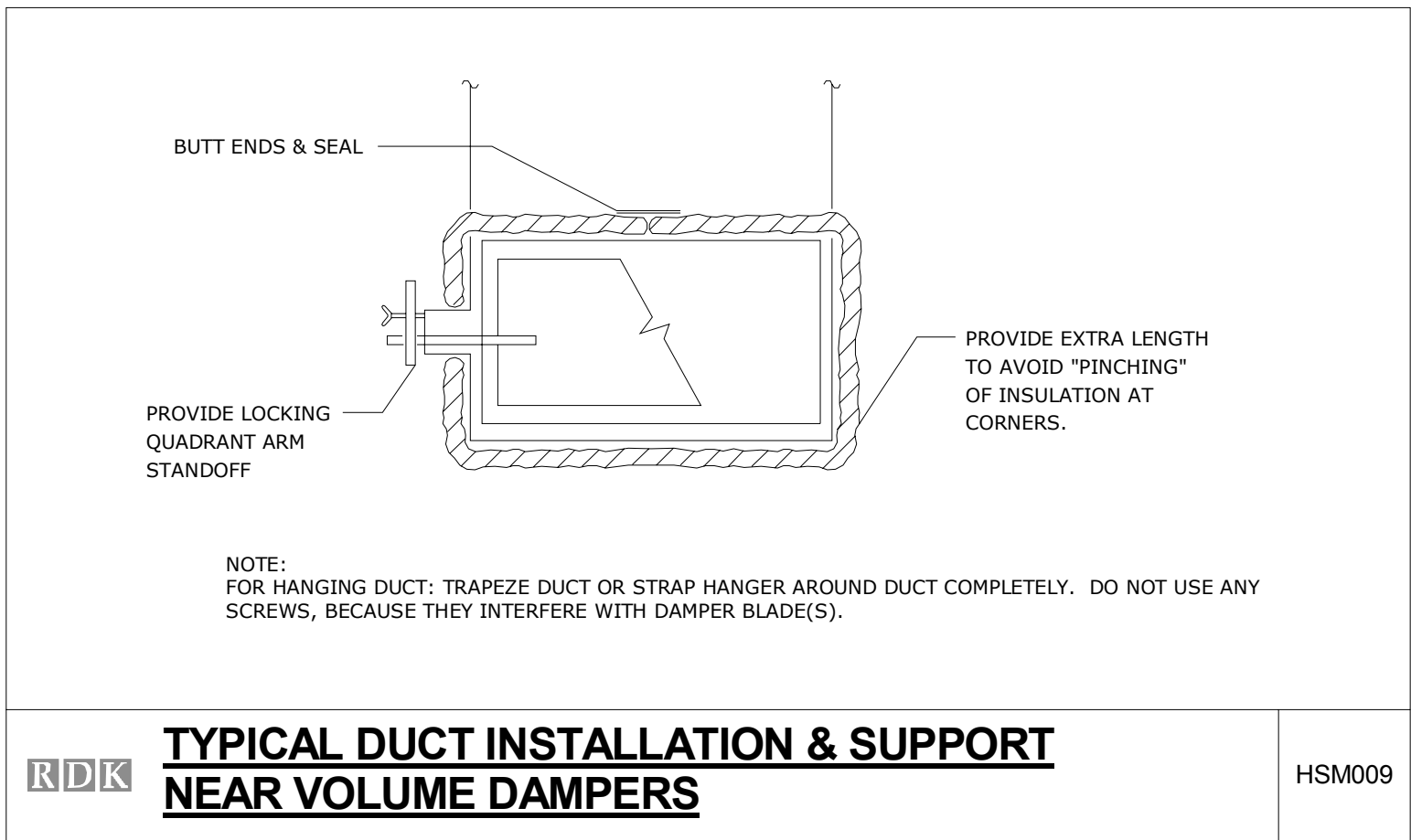
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		DRAWING TITLE <b>MECHANICAL CONTROLS IV</b>	DRAWING NO. <b>MEC-503</b>
			SHEET NO. <b>10.31</b>





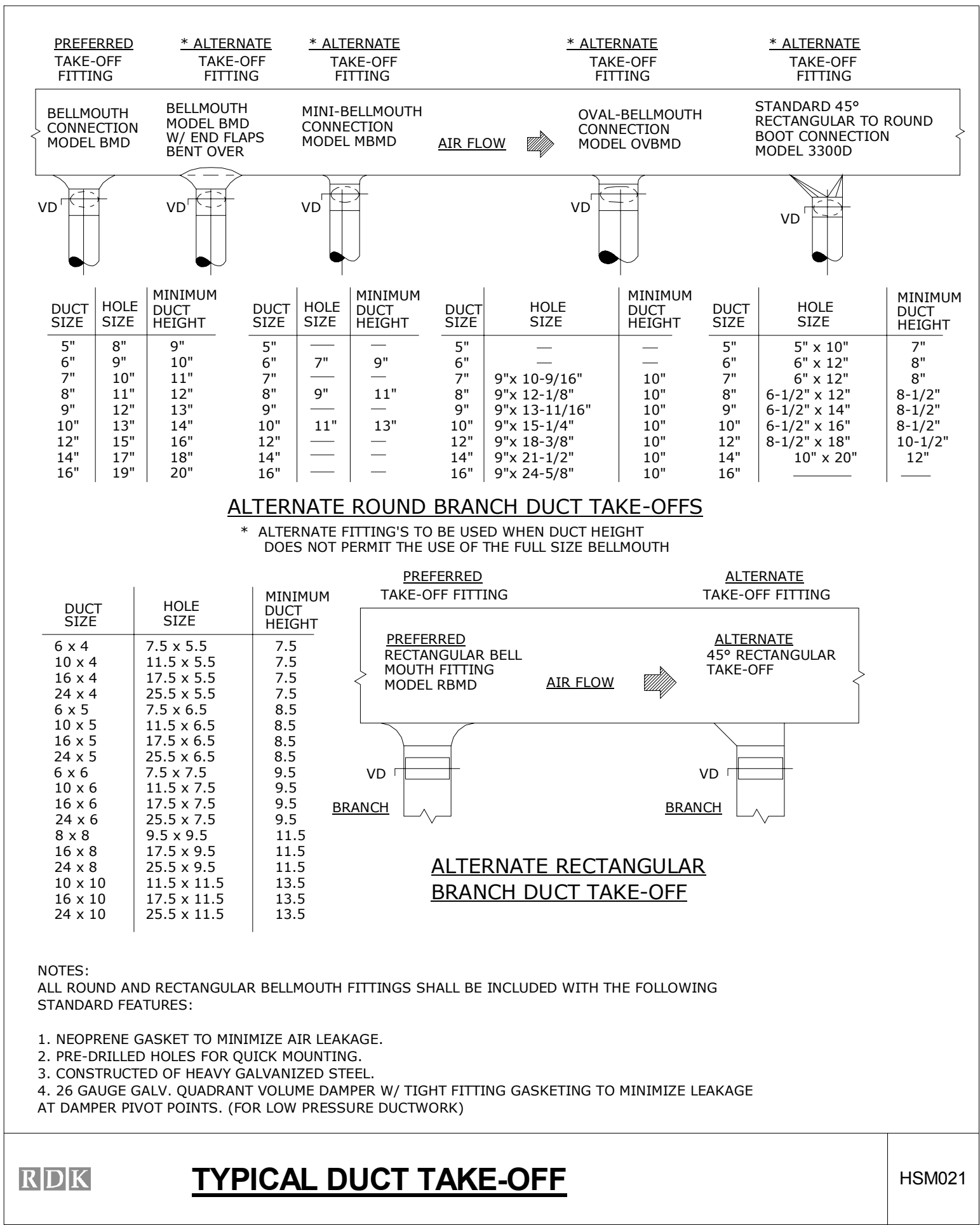
### TYPICAL SUPPLY DIFFUSER/ REGISTER DUCTWORK & CONNECTION

HSM017



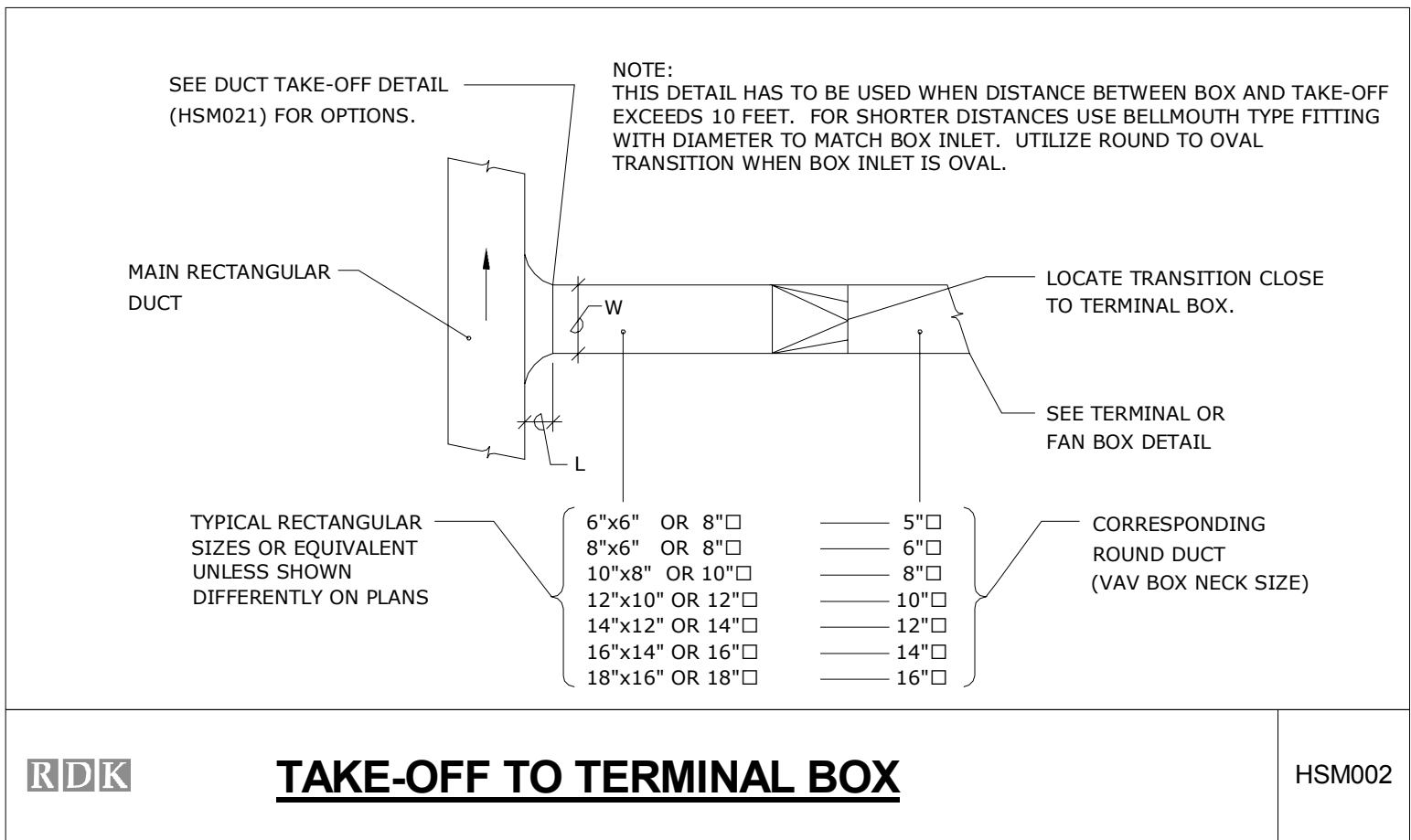
### TYPICAL DUCT INSTALLATION & SUPPORT NEAR VOLUME DAMPERS

HSM009



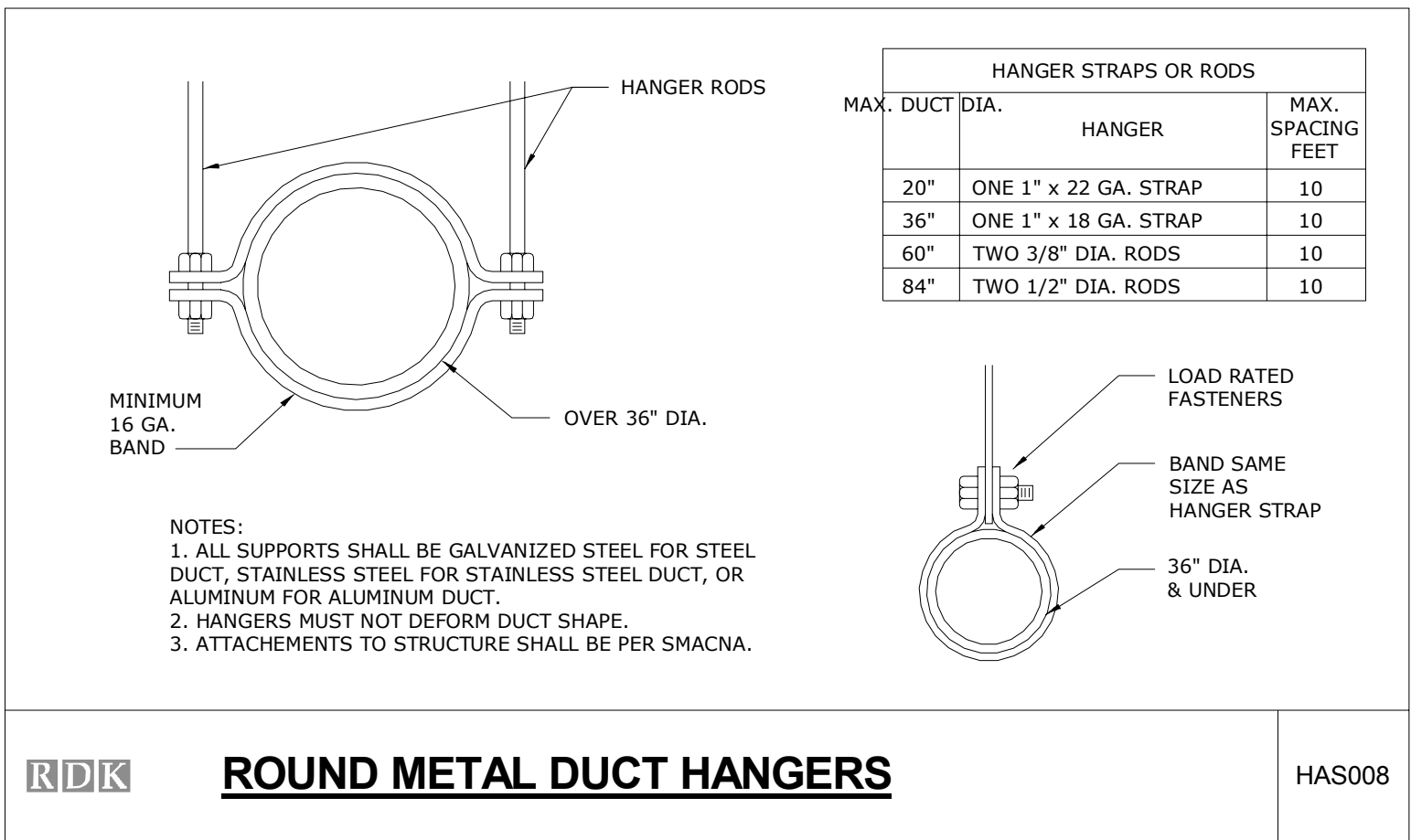
### TYPICAL DUCT TAKE-OFF

HSM021



### TAKE-OFF TO TERMINAL BOX

HSM002



### ROUND METAL DUCT HANGERS

HAS008

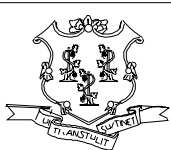
NO.	Revision Description	Date

THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.

DESIGNER/DRAFTER  
**WJS**

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**TFC**

SCALE  
1/8" = 1'-0"



### STATE OF CONNECTICUT DEPARTMENT OF TRANSPORTATION

File Name: MPPP\_CTDOT\_Rocky Hill Repair Facility\_Central.rvt



SIGNATURE/BLOCK:



PROJECT TITLE

### REPAIR FACILITY

TOWN

### ROCKY HILL

DRAWING TITLE

### MECHANICAL DETAILS I

PROJECT NO.

**118-0167**

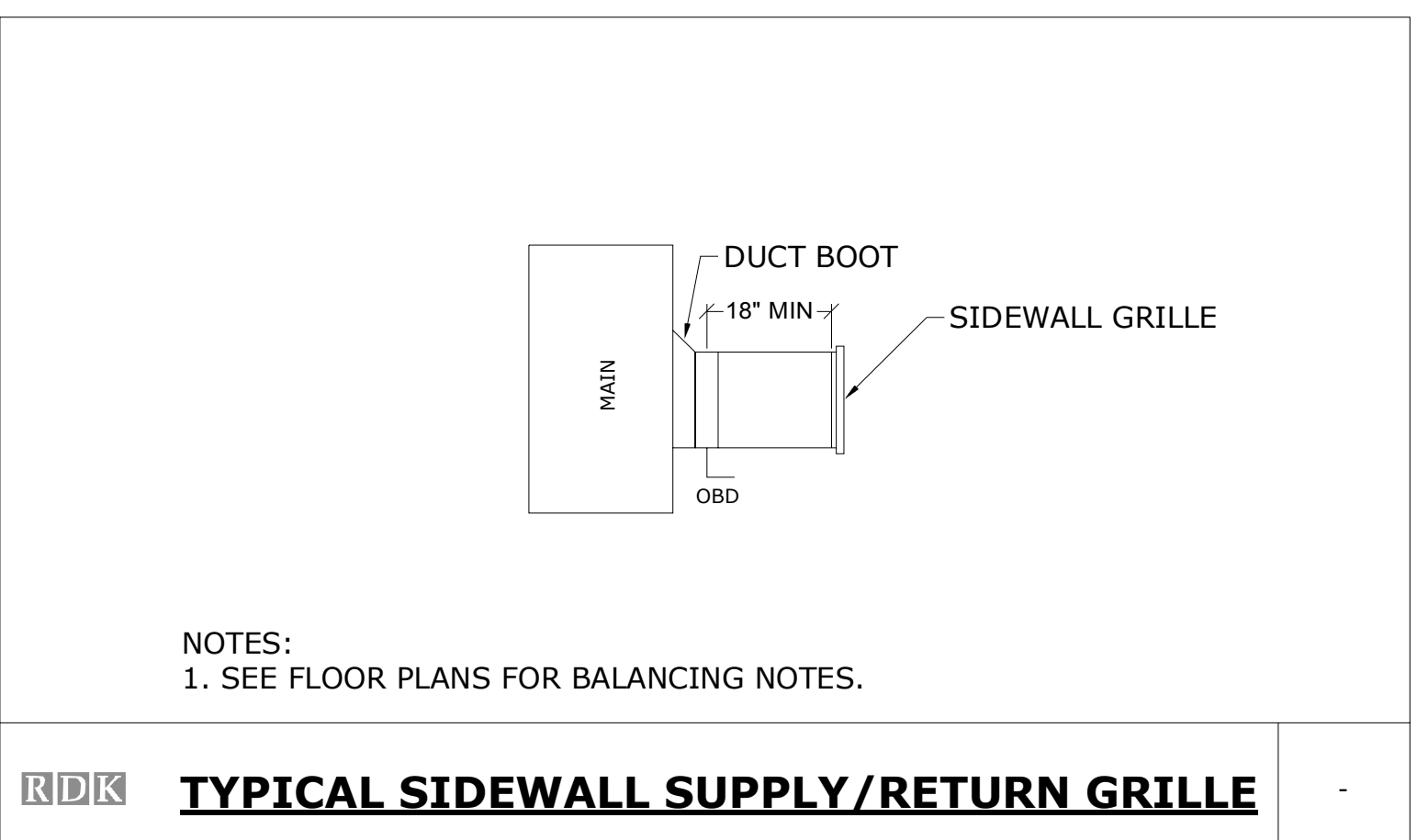
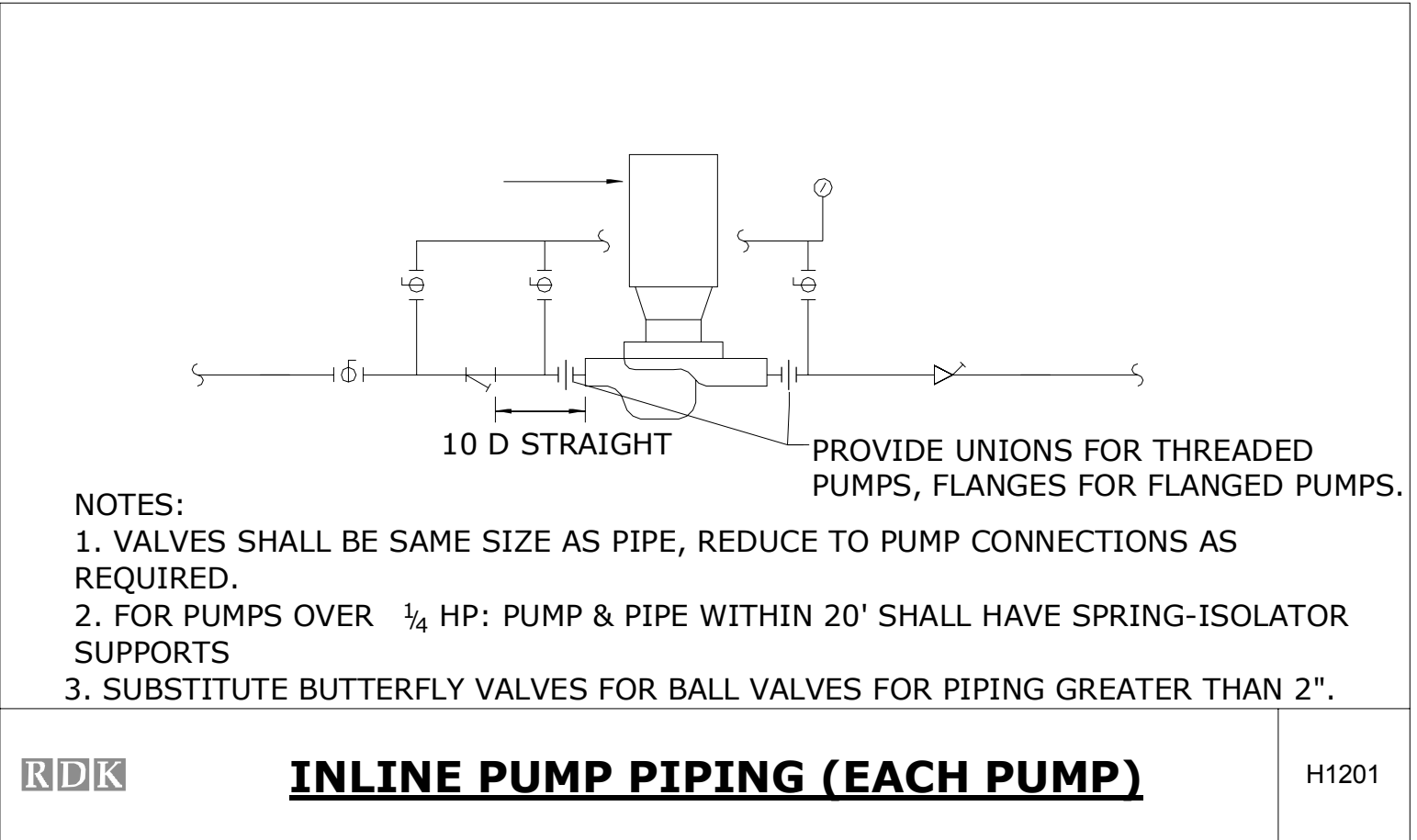
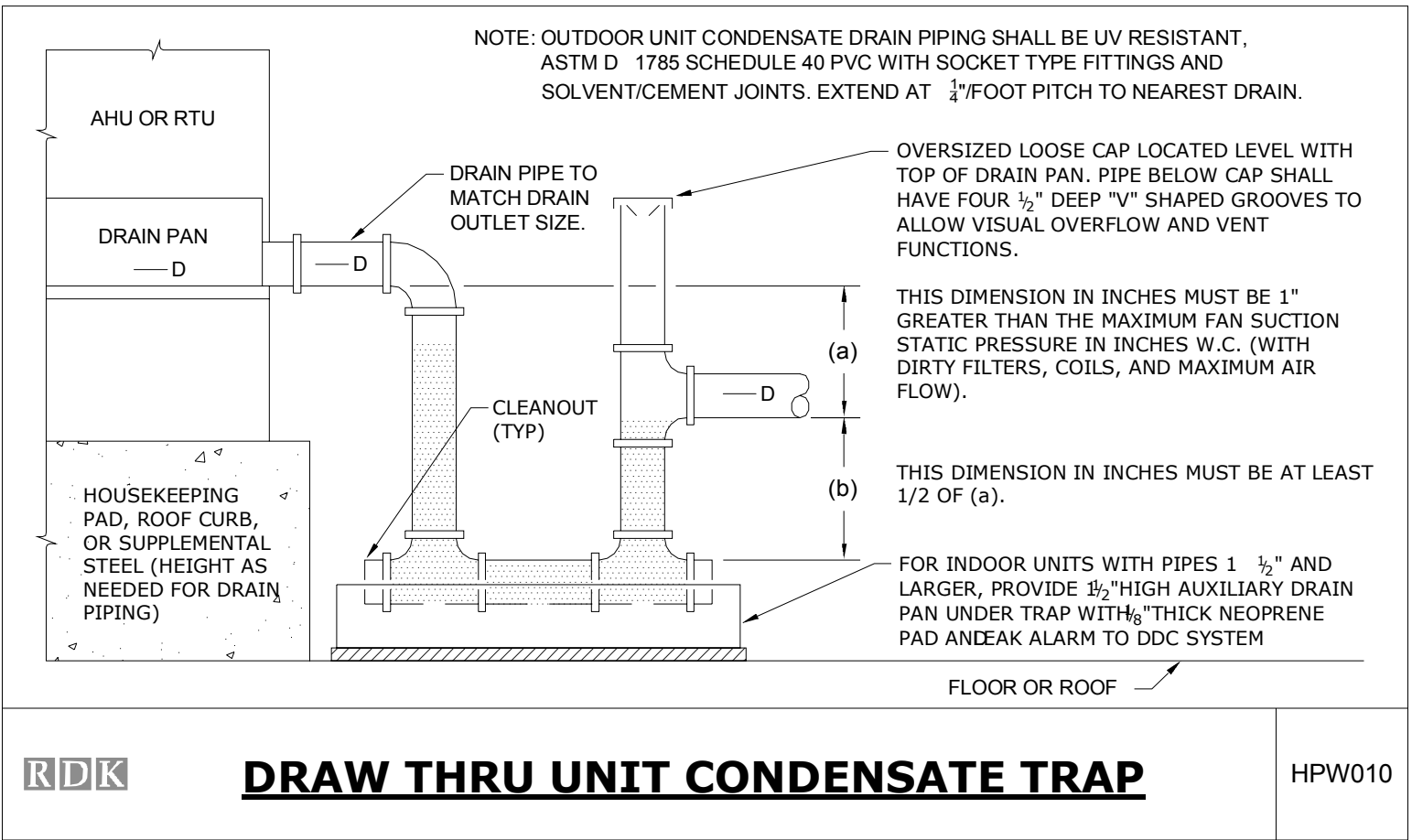
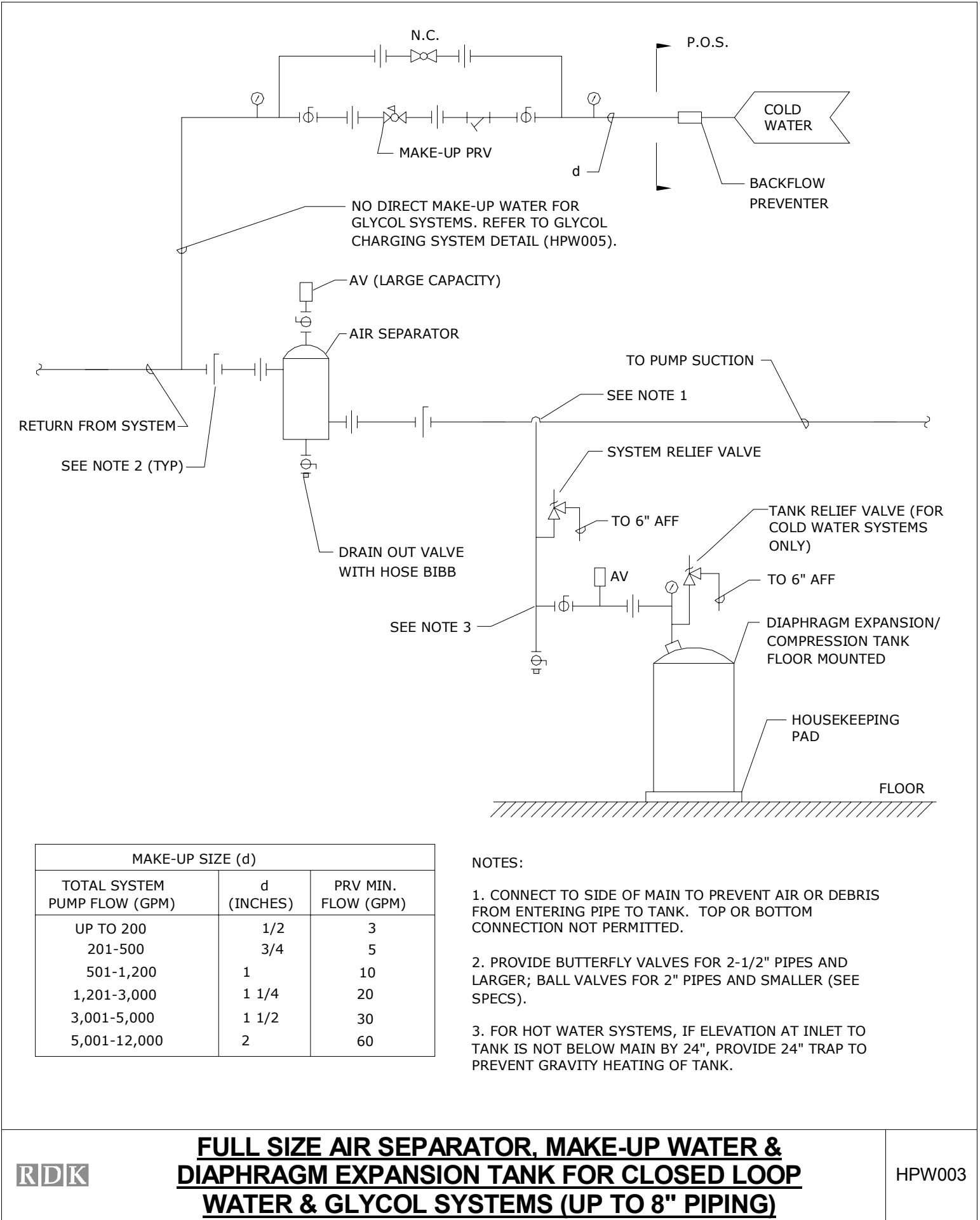
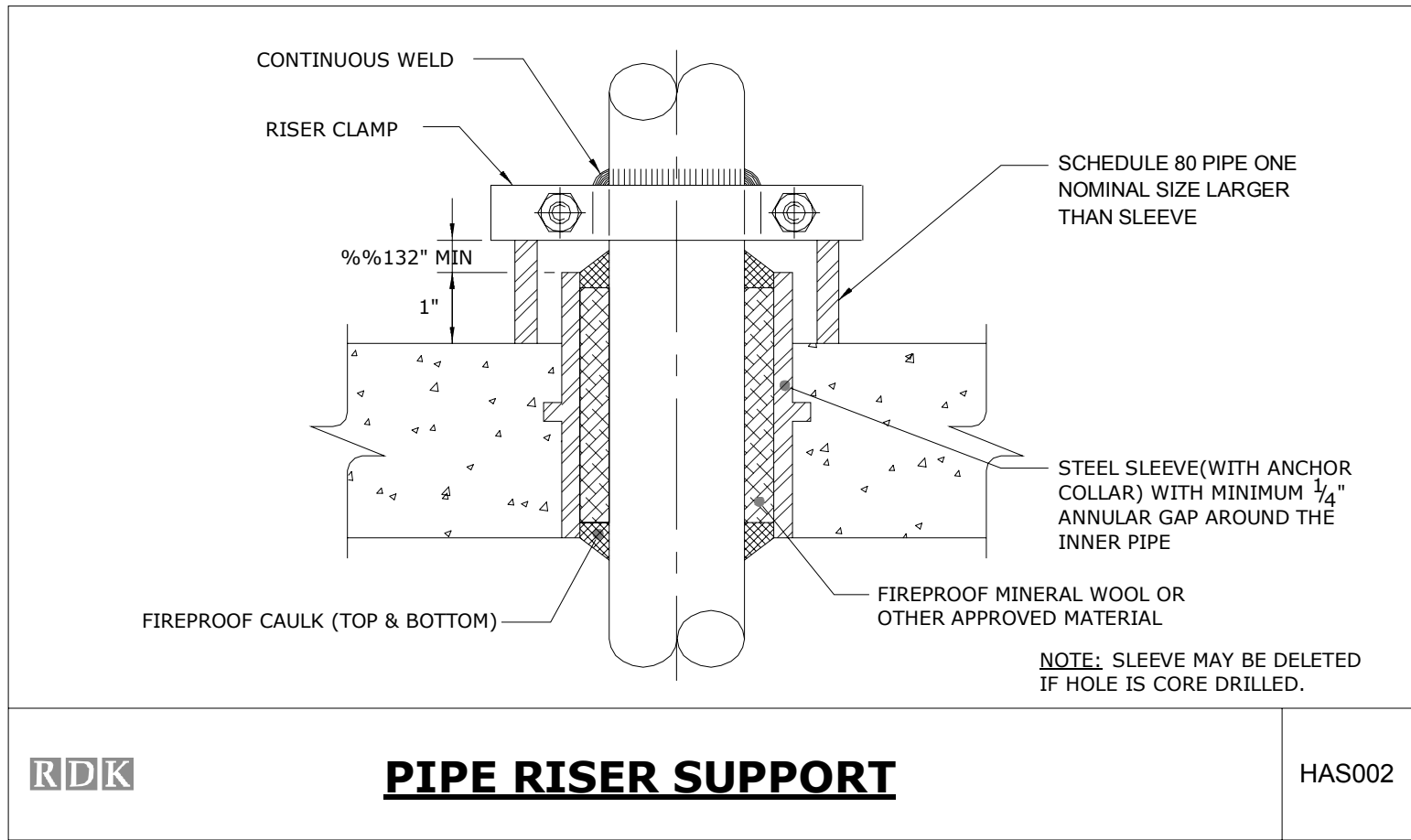
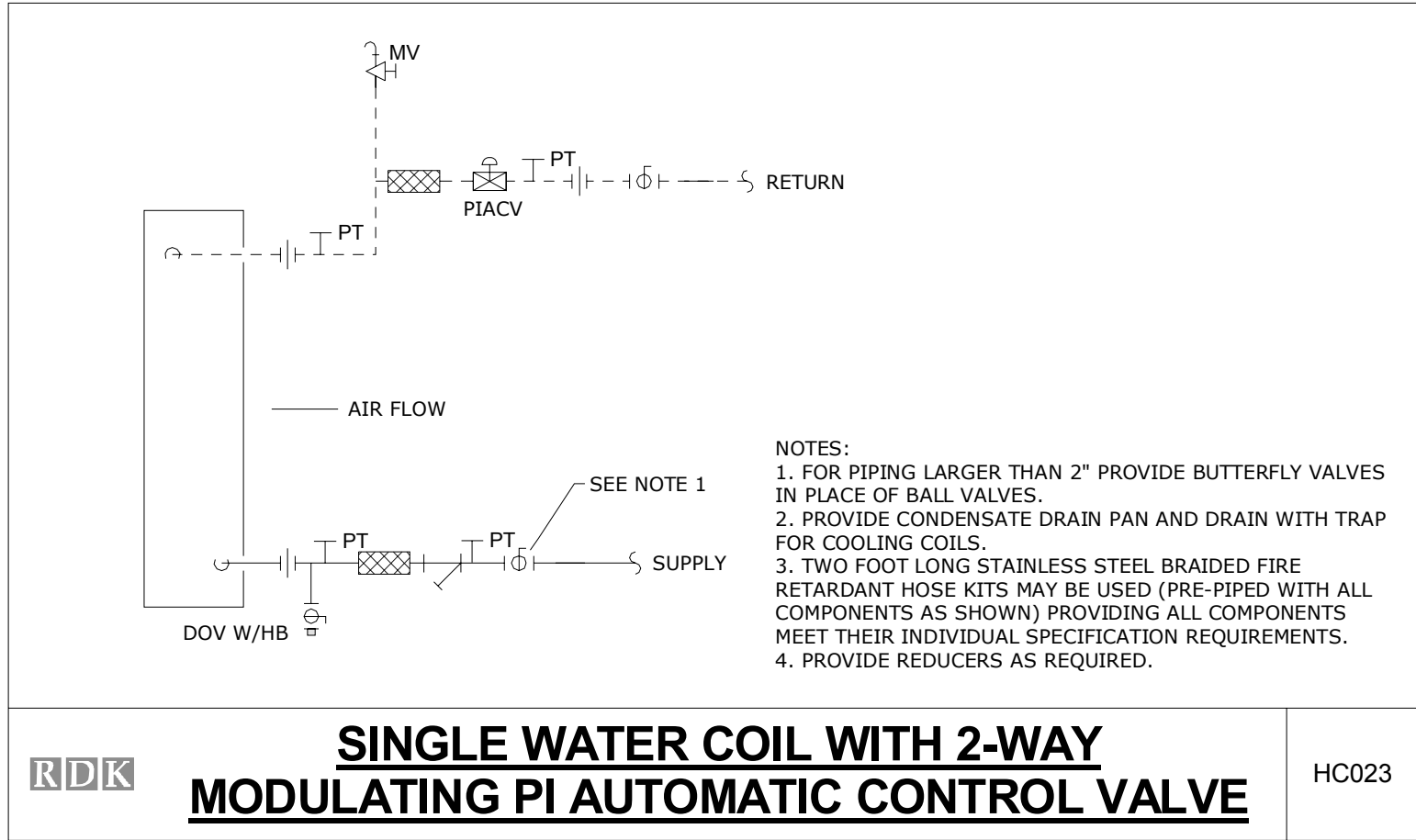
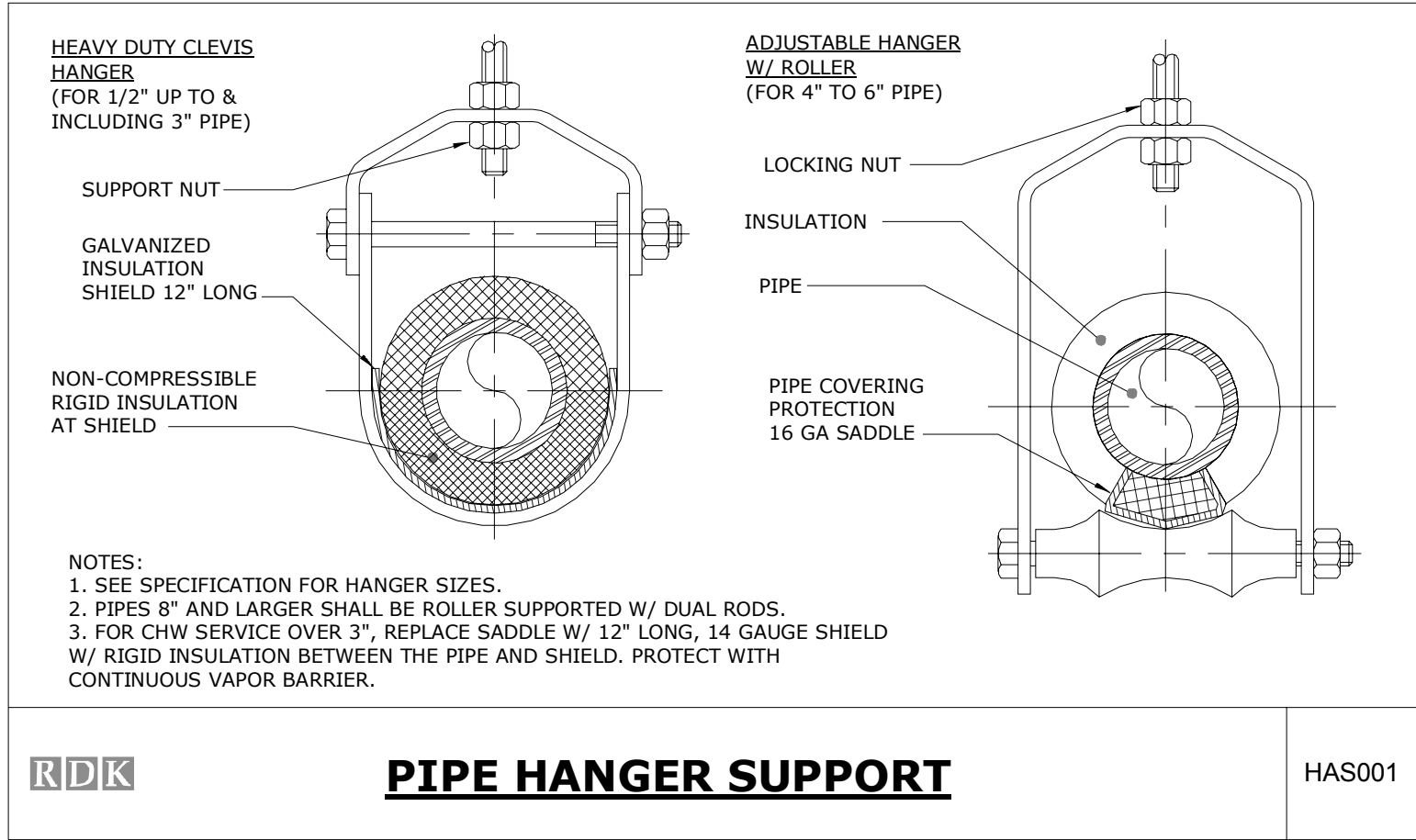
DRAWING NO.

**MEC-600**

SHEET NO.

**10.32**





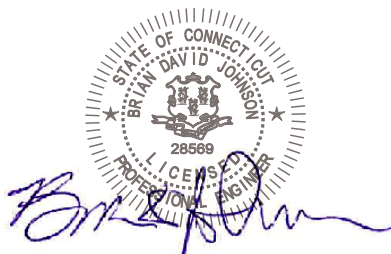
NO.	Revision Description	Date

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DESIGNER/DRAFTER <b>WJS</b>
CHECKED BY: <b>TFC</b>
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**STATE OF CONNECTICUT  
DEPARTMENT OF TRANSPORTATION**

File Name: MPPP\_CTDOT\_Rocky Hill Repair Facility\_Central.rvt

SIGNATURE/BLOCK:  


PROJECT TITLE  
**REPAIR FACILITY**

TOWN  
**ROCKY HILL**

DRAWING TITLE  
**MECHANICAL DETAILS II**

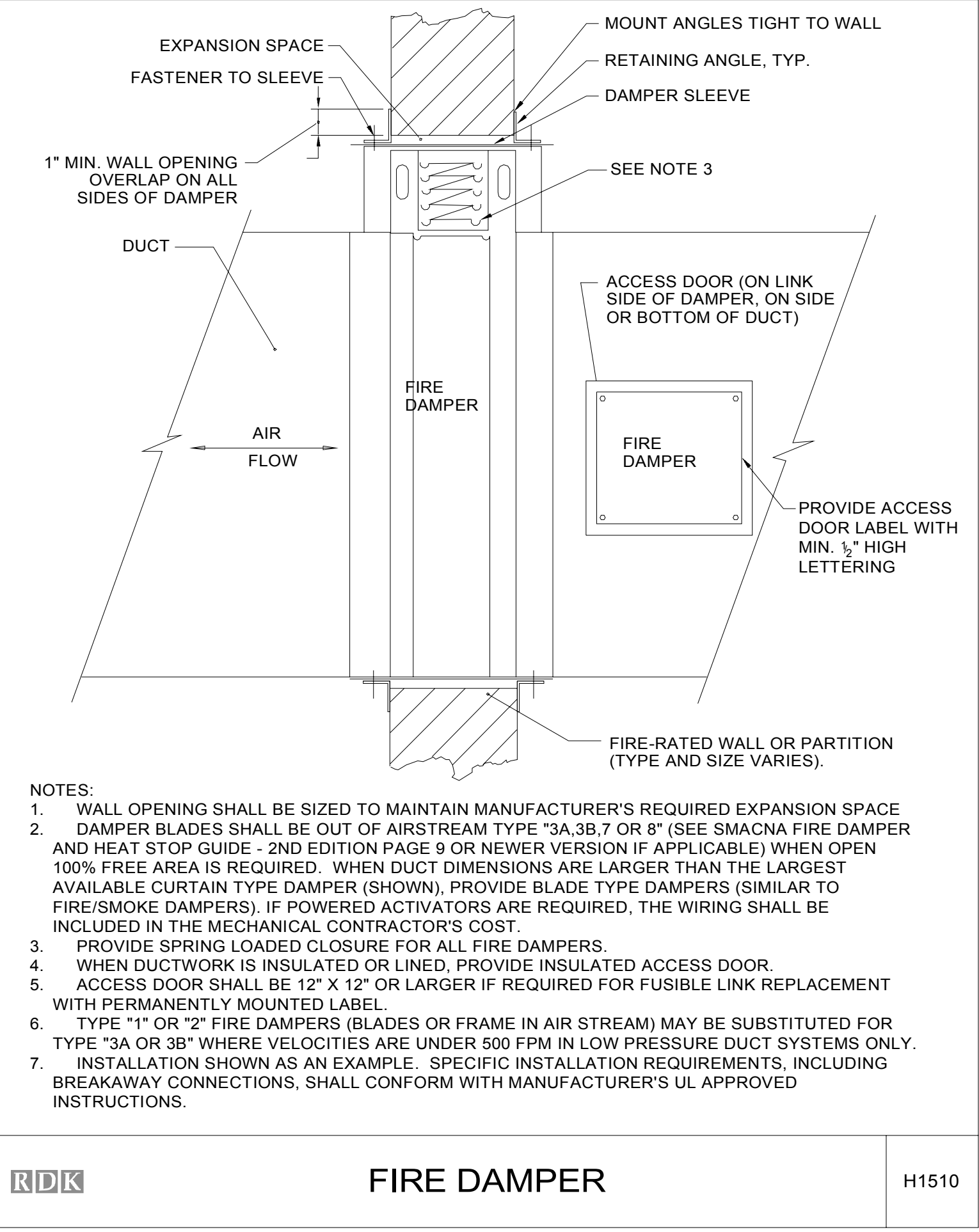
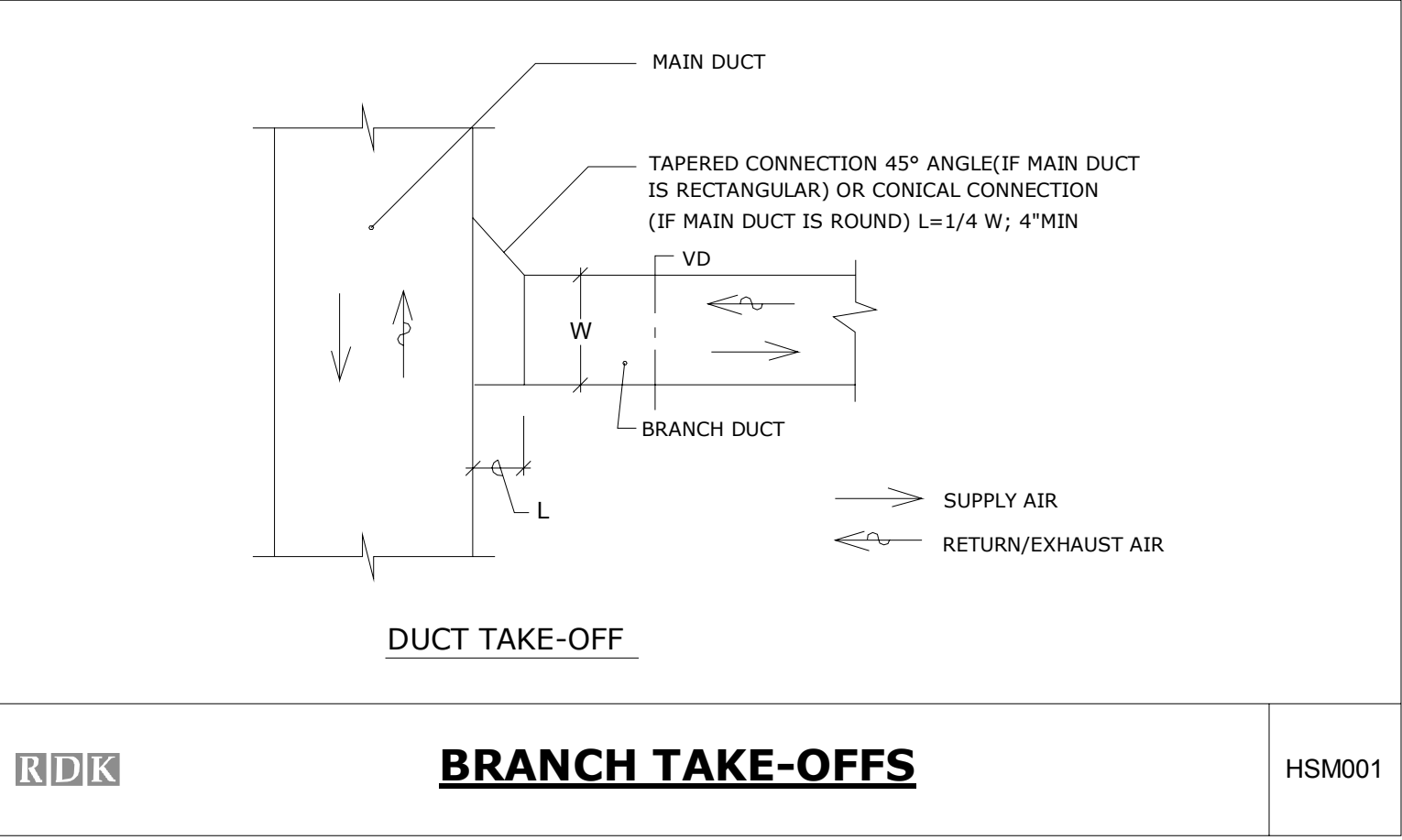
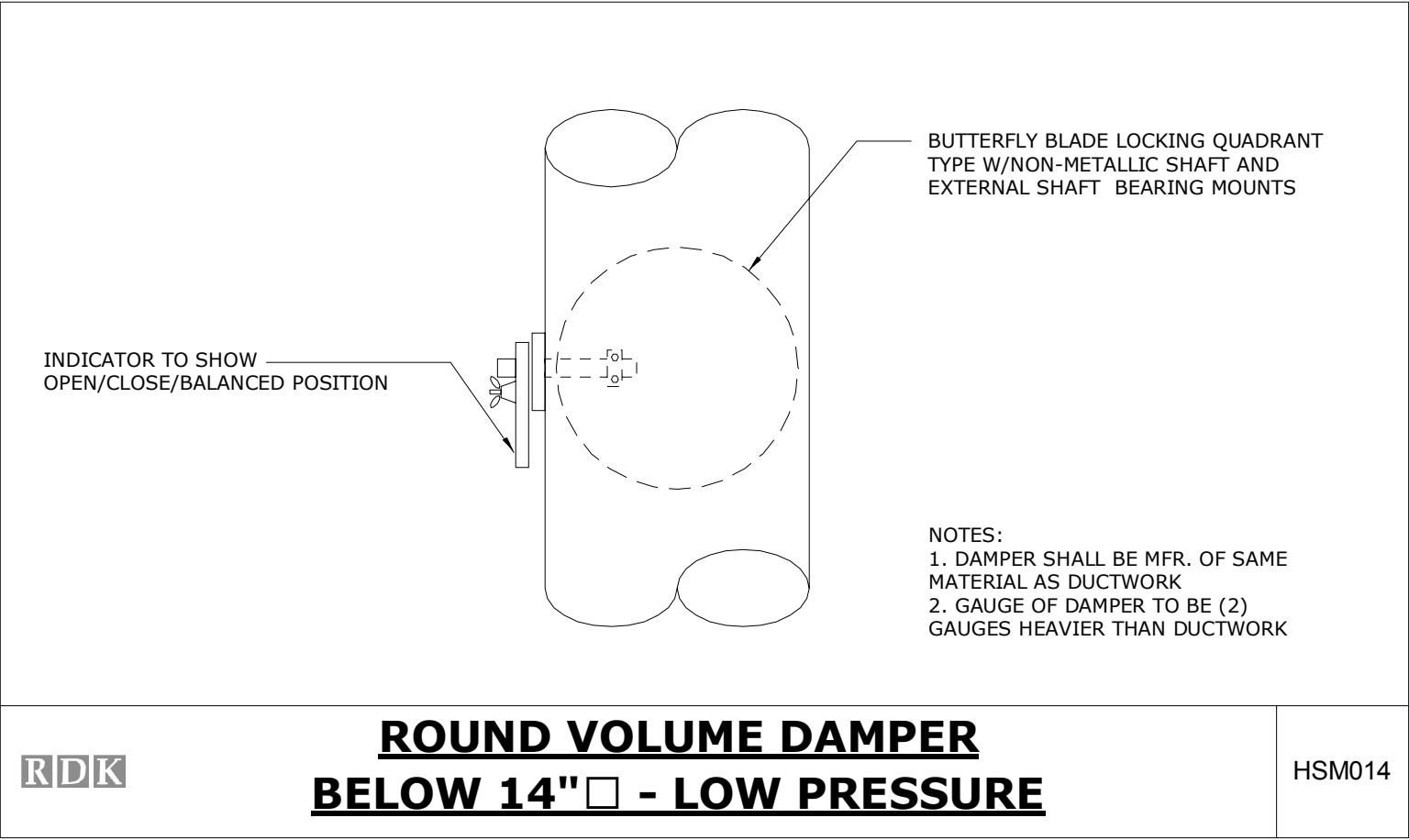
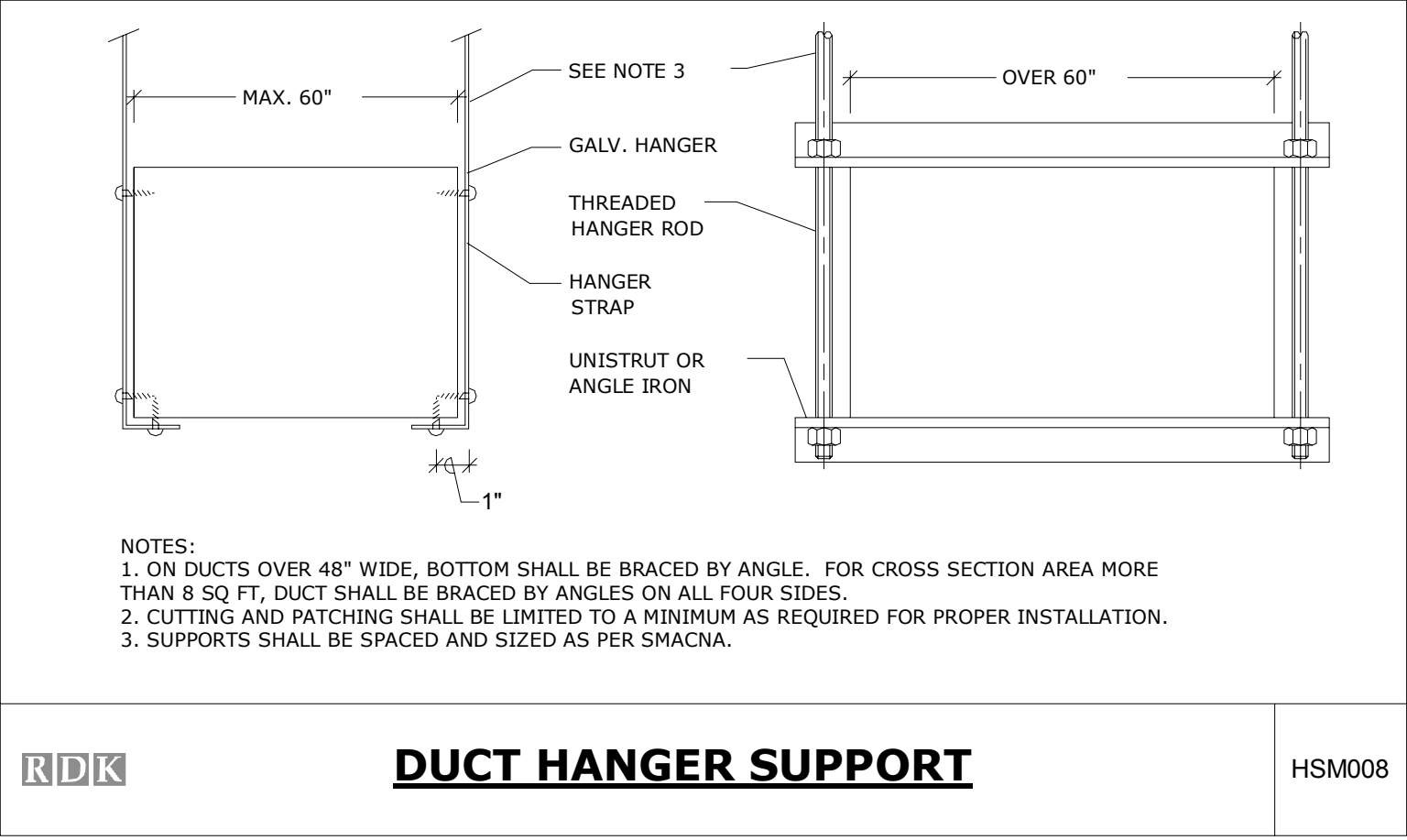
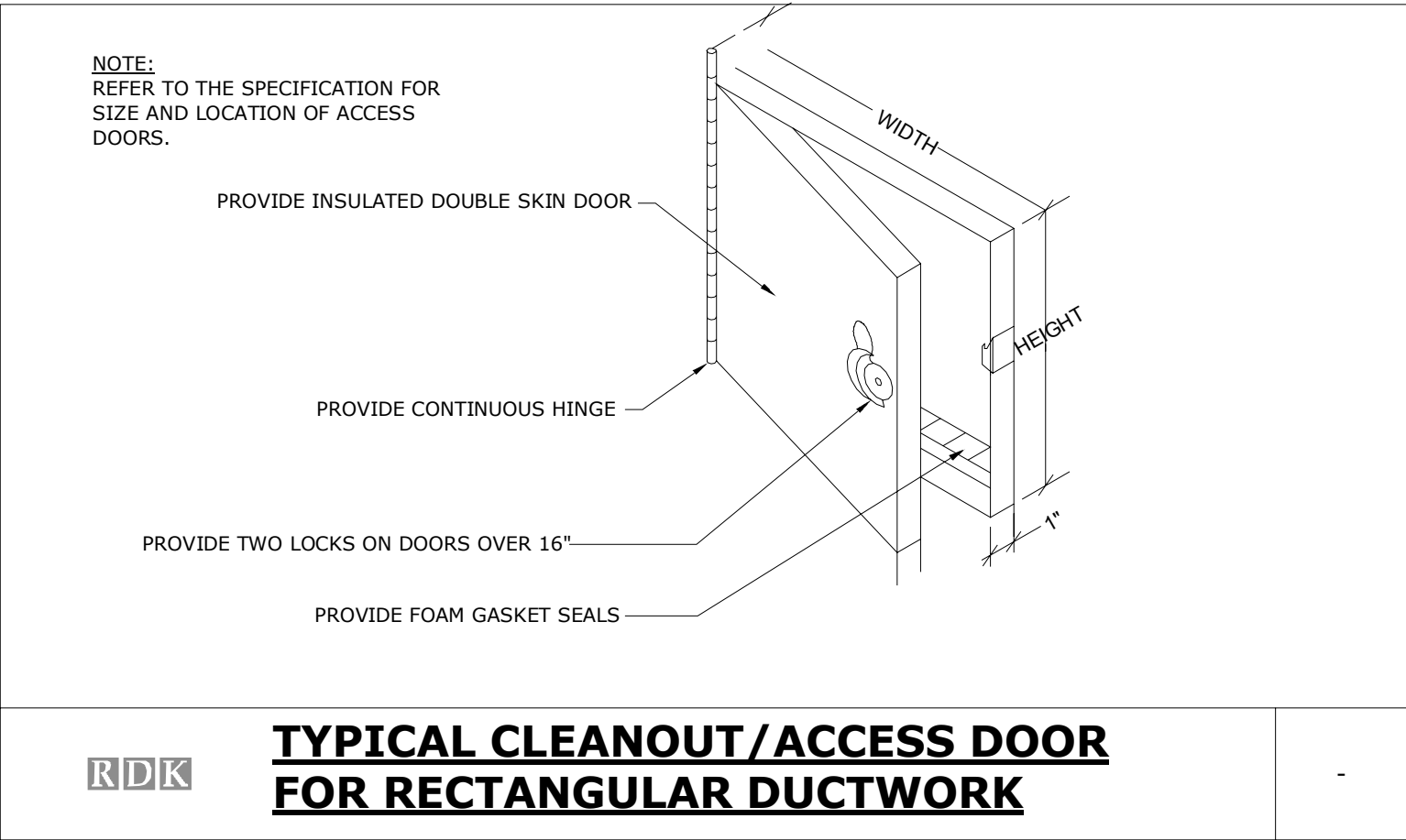
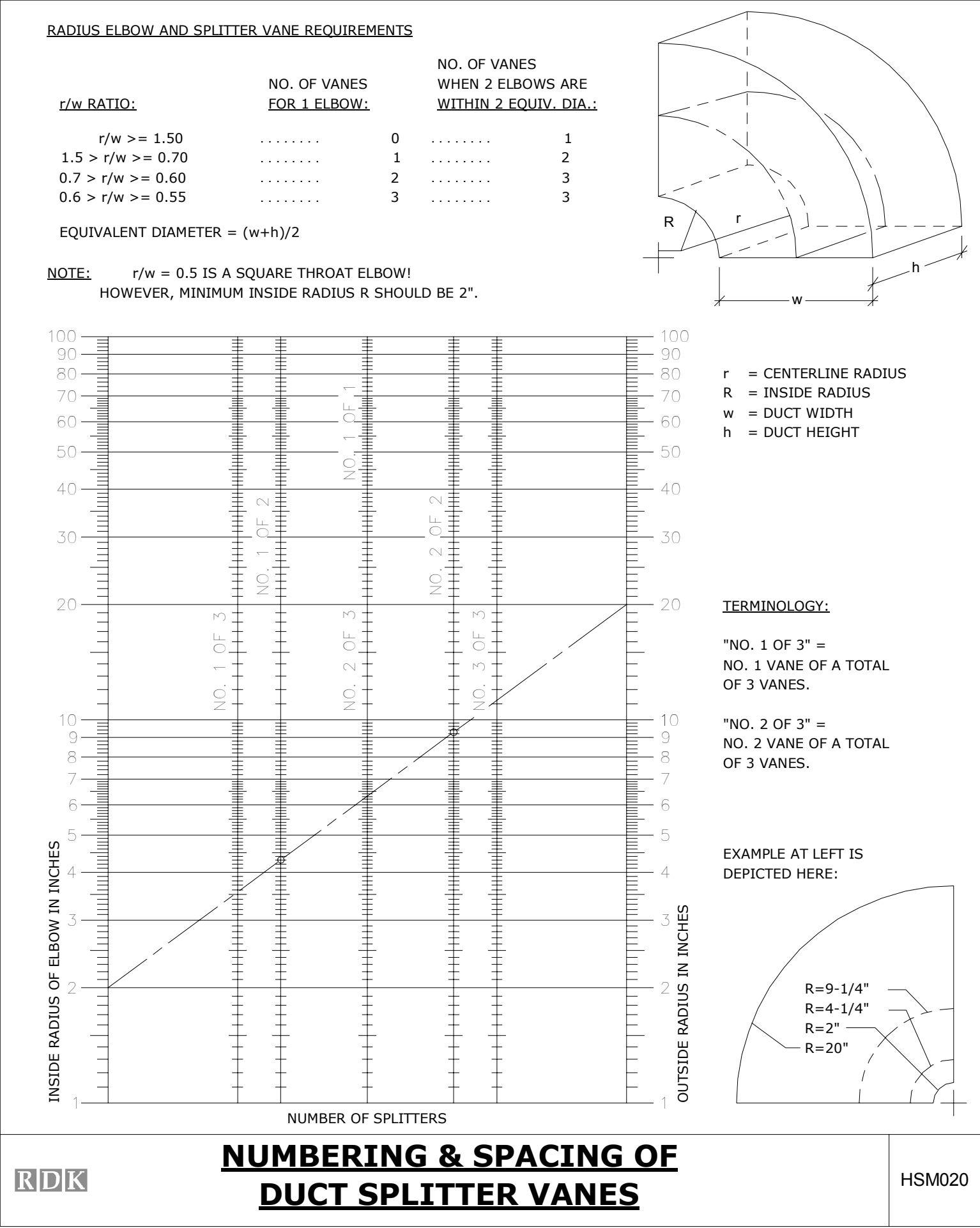
PROJECT NO.  
**118-0167**

DRAWING NO.  
**MEC-601**

SHEET NO.  
**10.33**







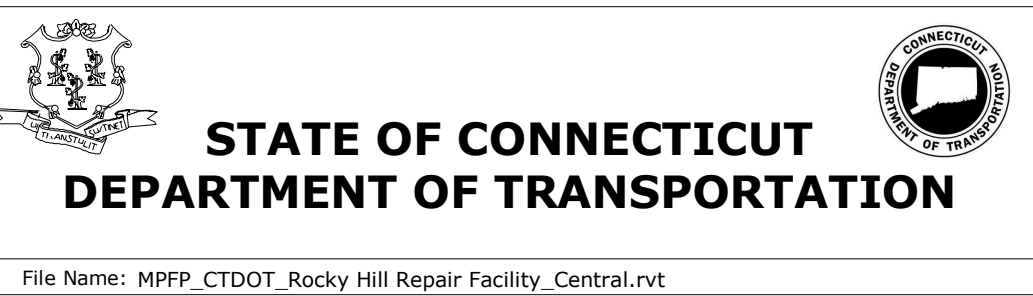
NO.	Revision Description	Date

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DESIGNER/DRAFTER  
**WJS**

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PROJECT TITLE  
**REPAIR FACILITY**

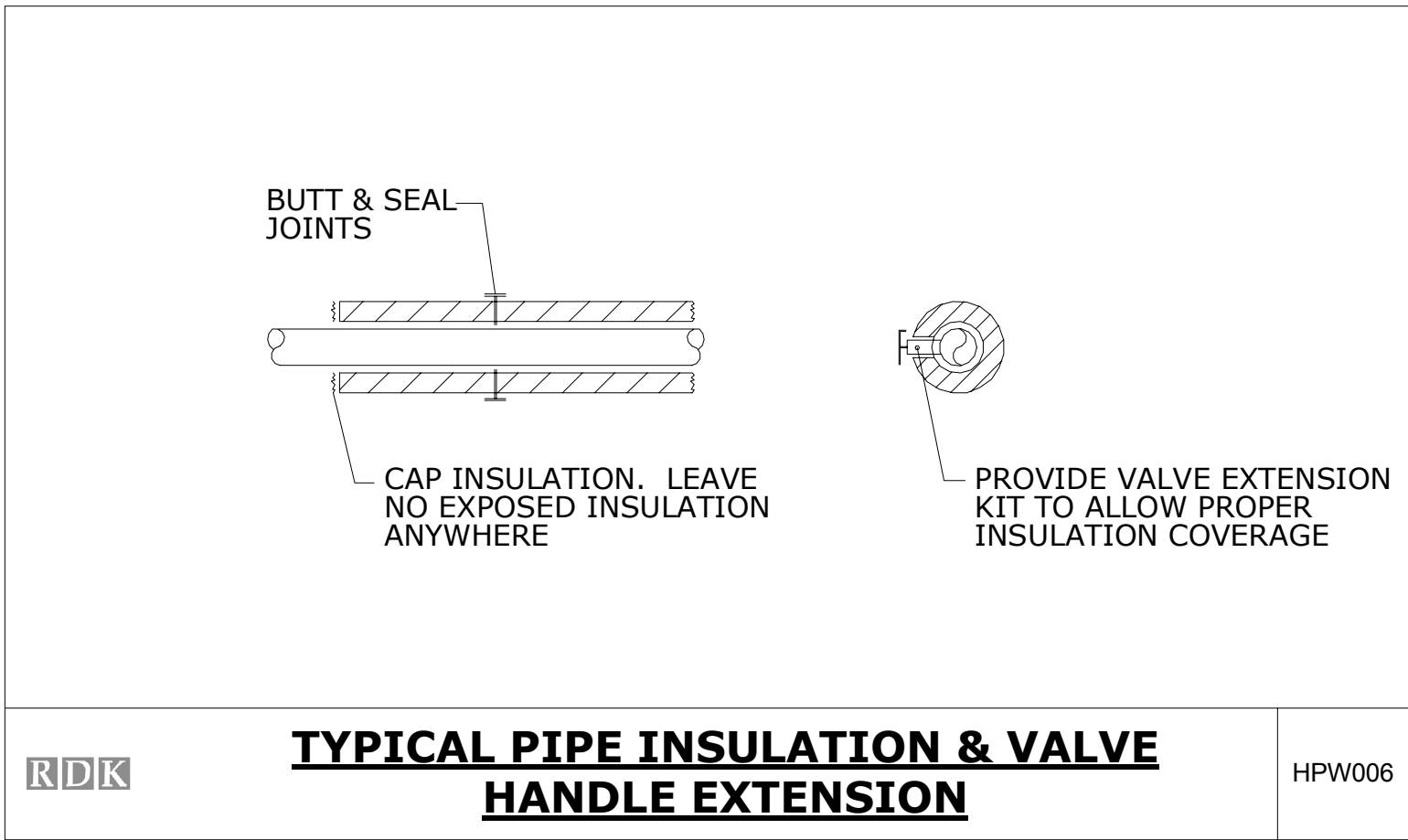
TOWN  
**ROCKY HILL**

DRAWING TITLE  
**MECHANICAL DETAILS IV**

PROJECT NO.  
**118-0167**

DRAWING NO.  
**MEC-603**

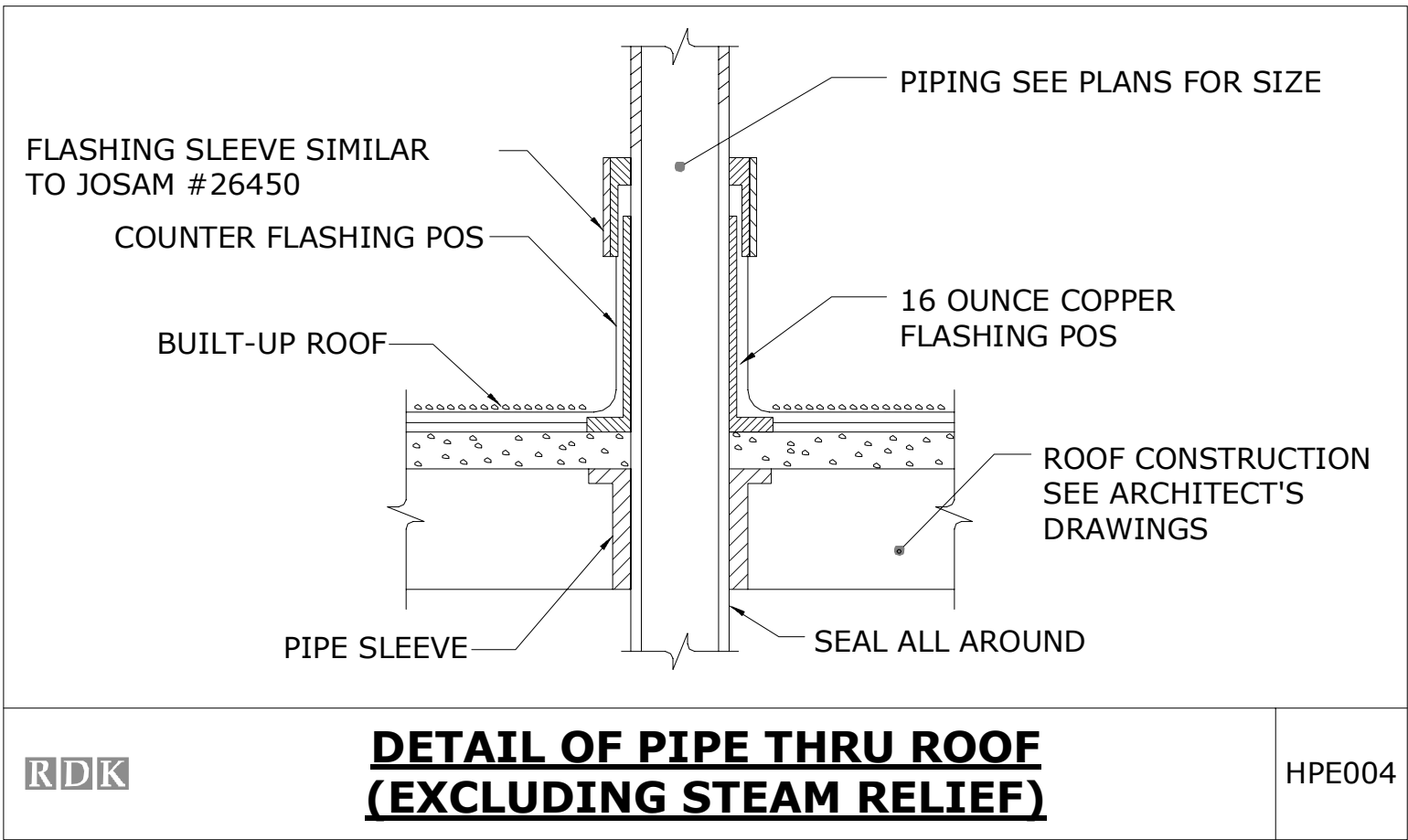
SHEET NO.  
**10.35**



RDK

**TYPICAL PIPE INSULATION & VALVE  
HANDLE EXTENSION**

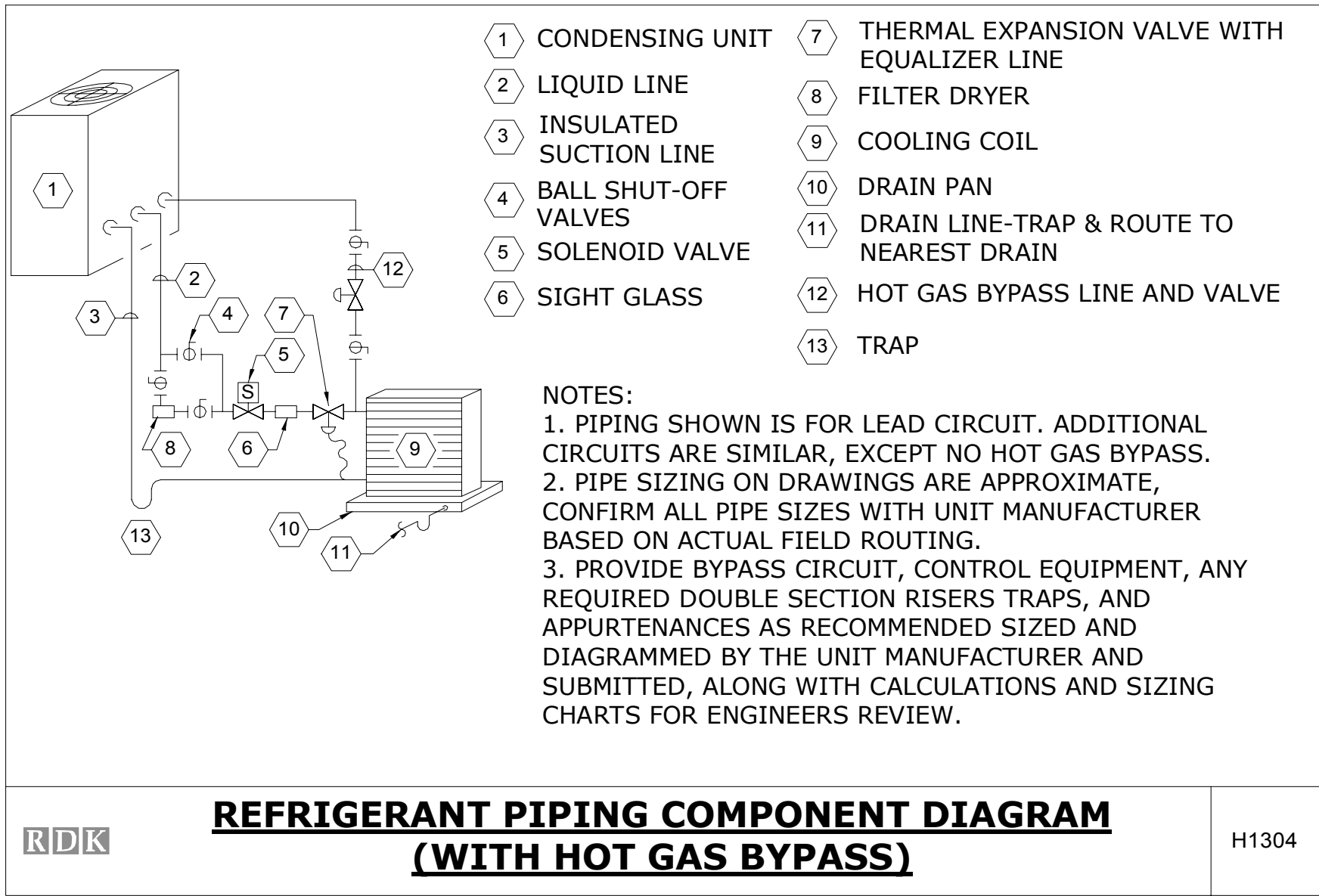
HPW006



RDK

**DETAIL OF PIPE THRU ROOF  
(EXCLUDING STEAM RELIEF)**

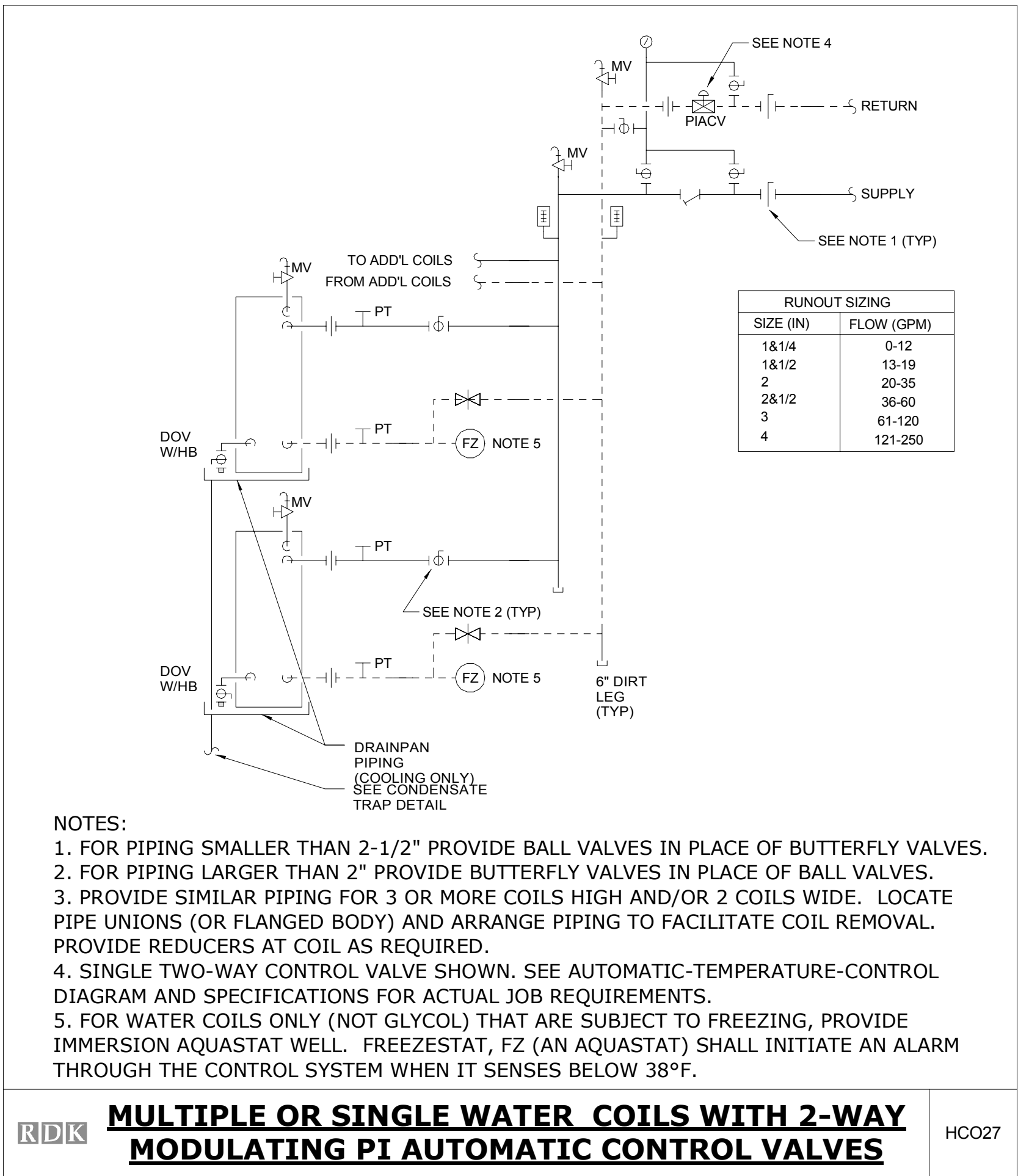
HPE004



RDK

**REFRIGERANT PIPING COMPONENT DIAGRAM  
(WITH HOT GAS BYPASS)**

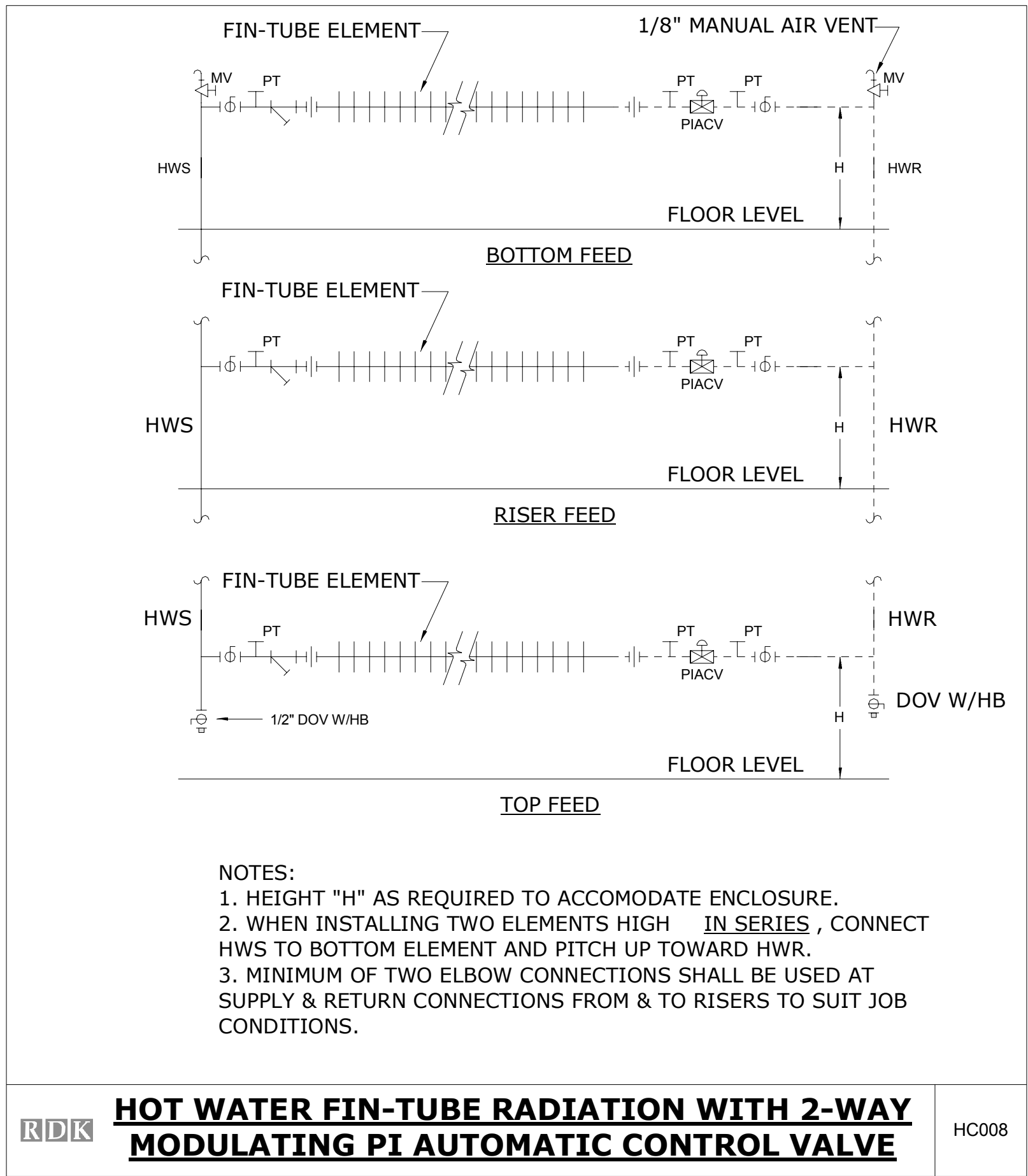
H1304



RDK

**MULTIPLE OR SINGLE WATER COILS WITH 2-WAY  
MODULATING PI AUTOMATIC CONTROL VALVES**

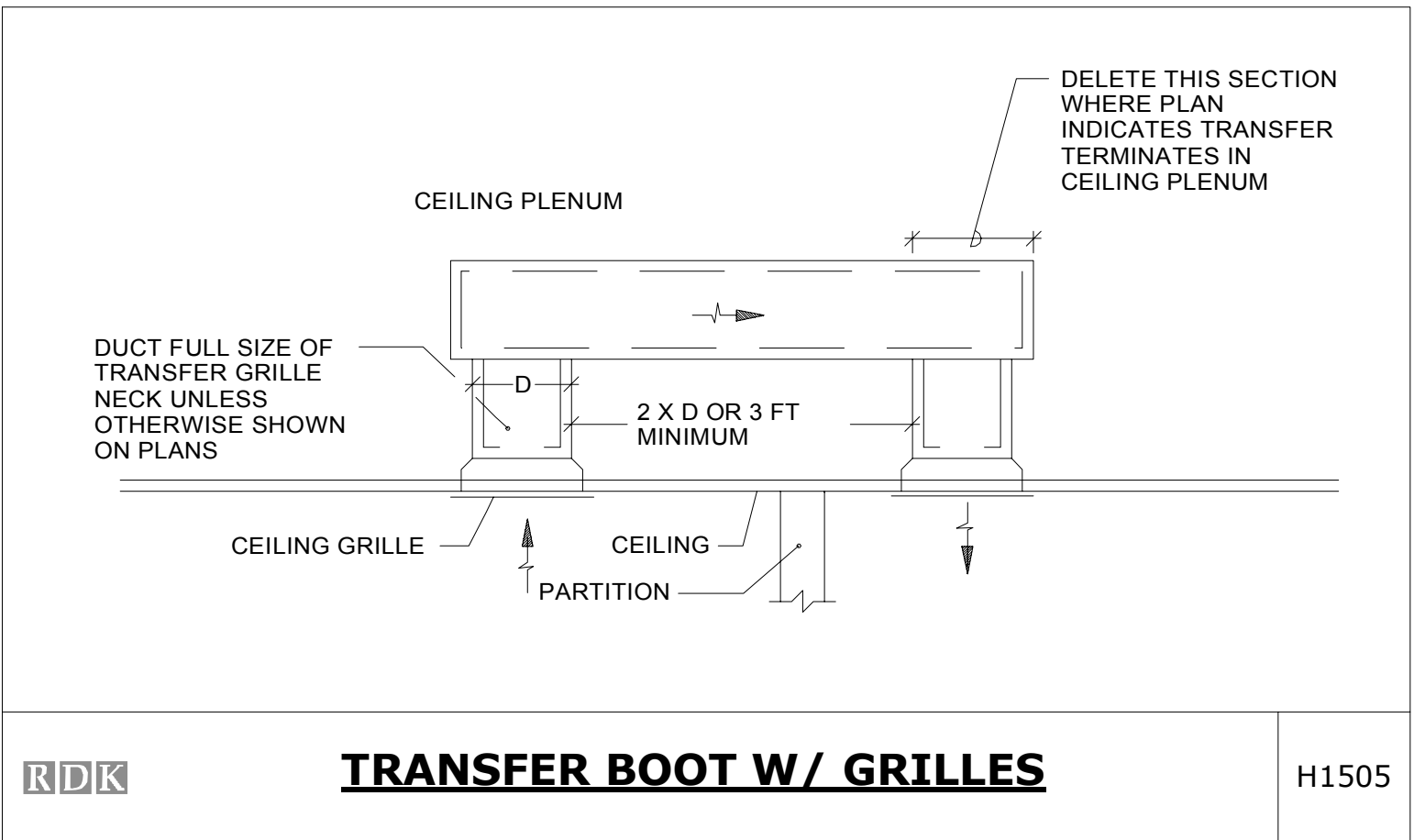
HCO27



RDK

**HOT WATER FIN-TUBE RADIATION WITH 2-WAY  
MODULATING PI AUTOMATIC CONTROL VALVE**

HC008

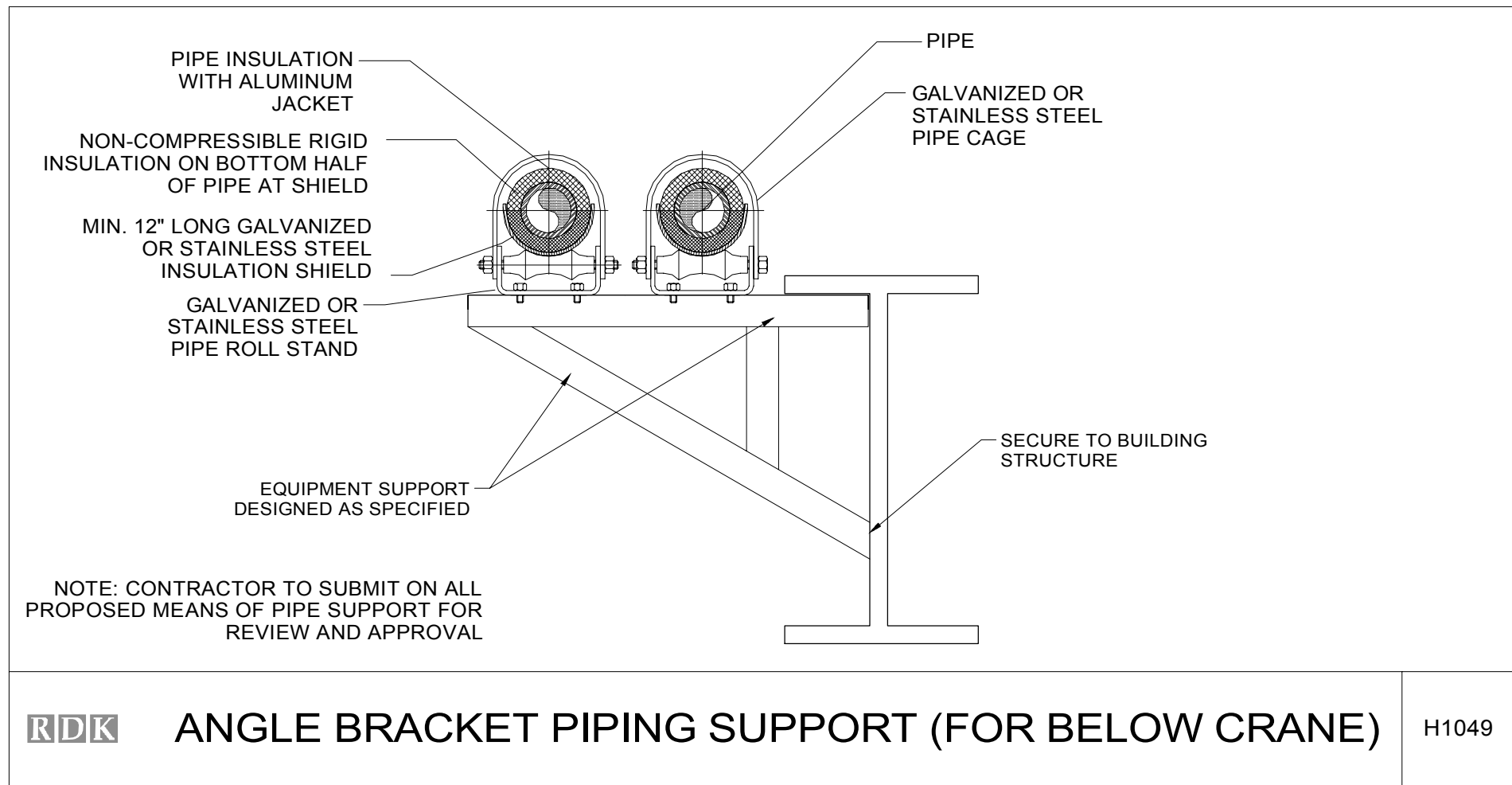
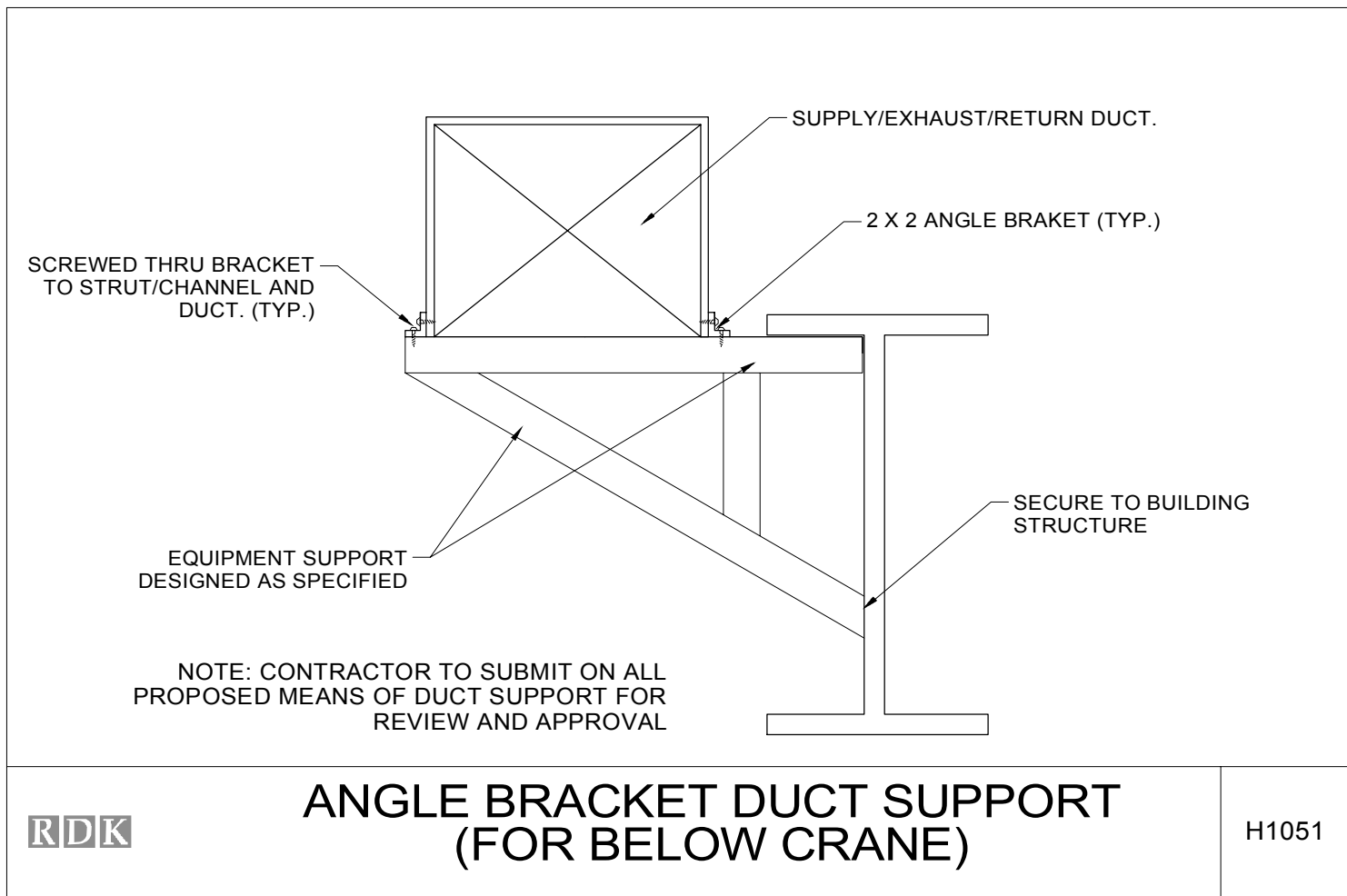
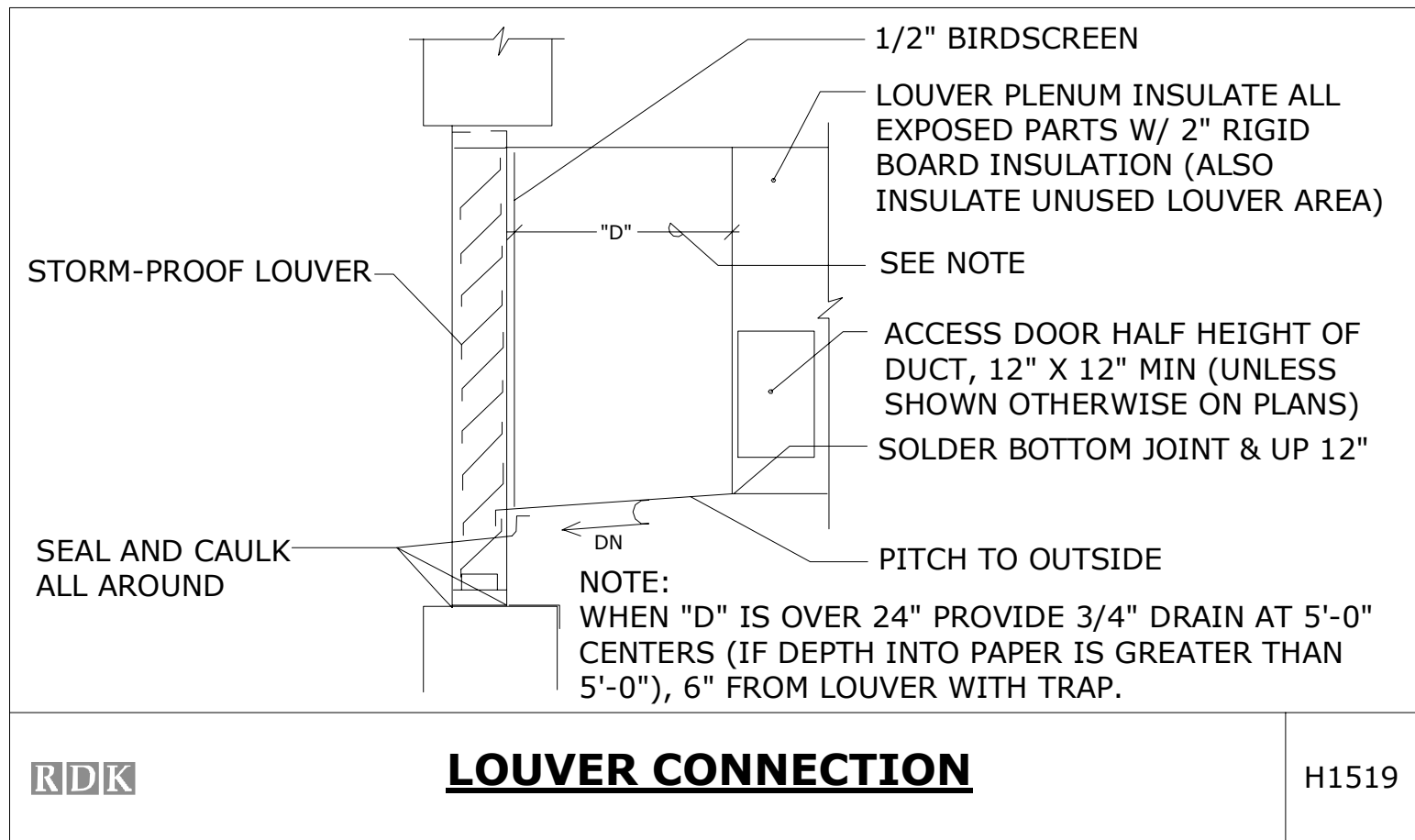
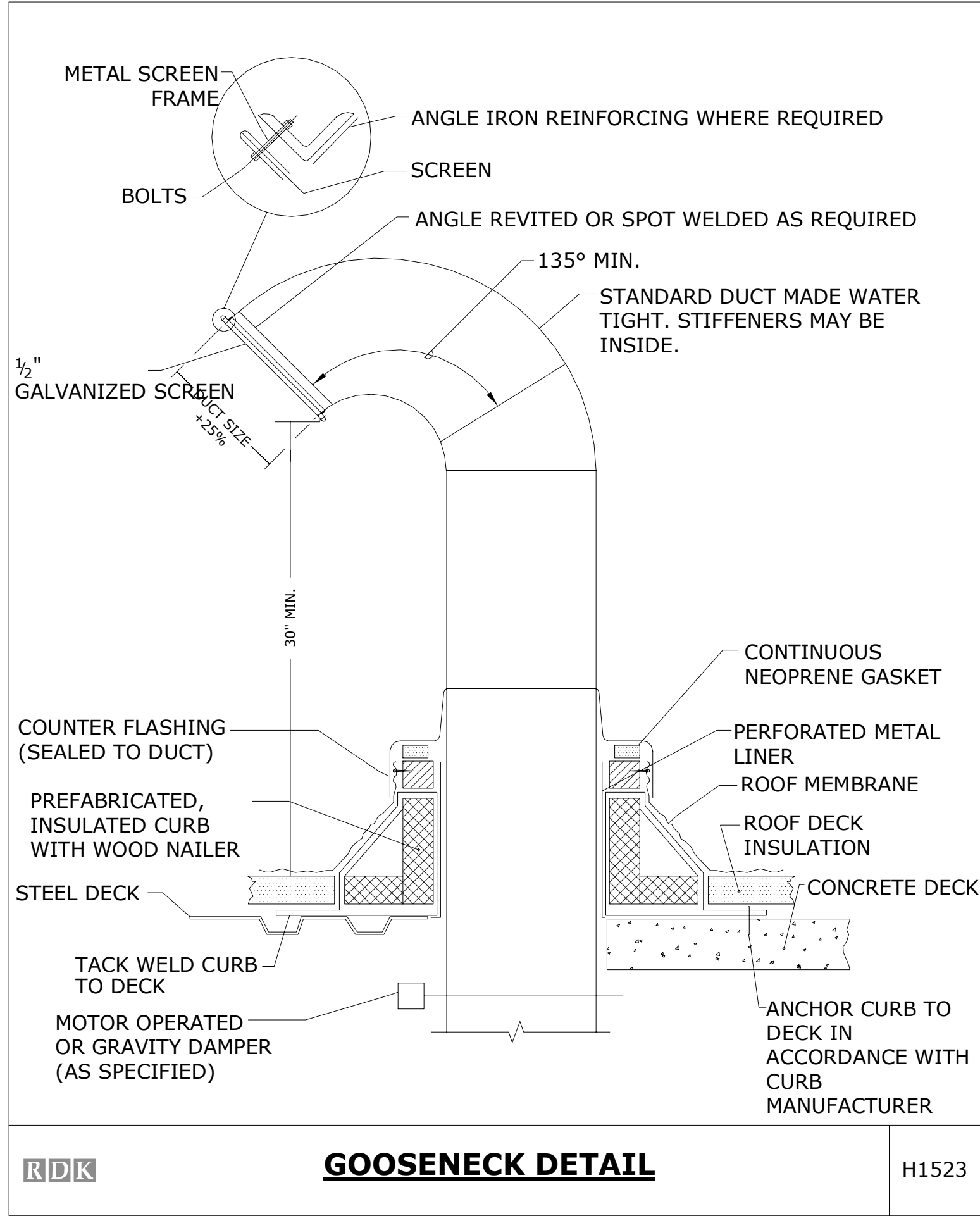
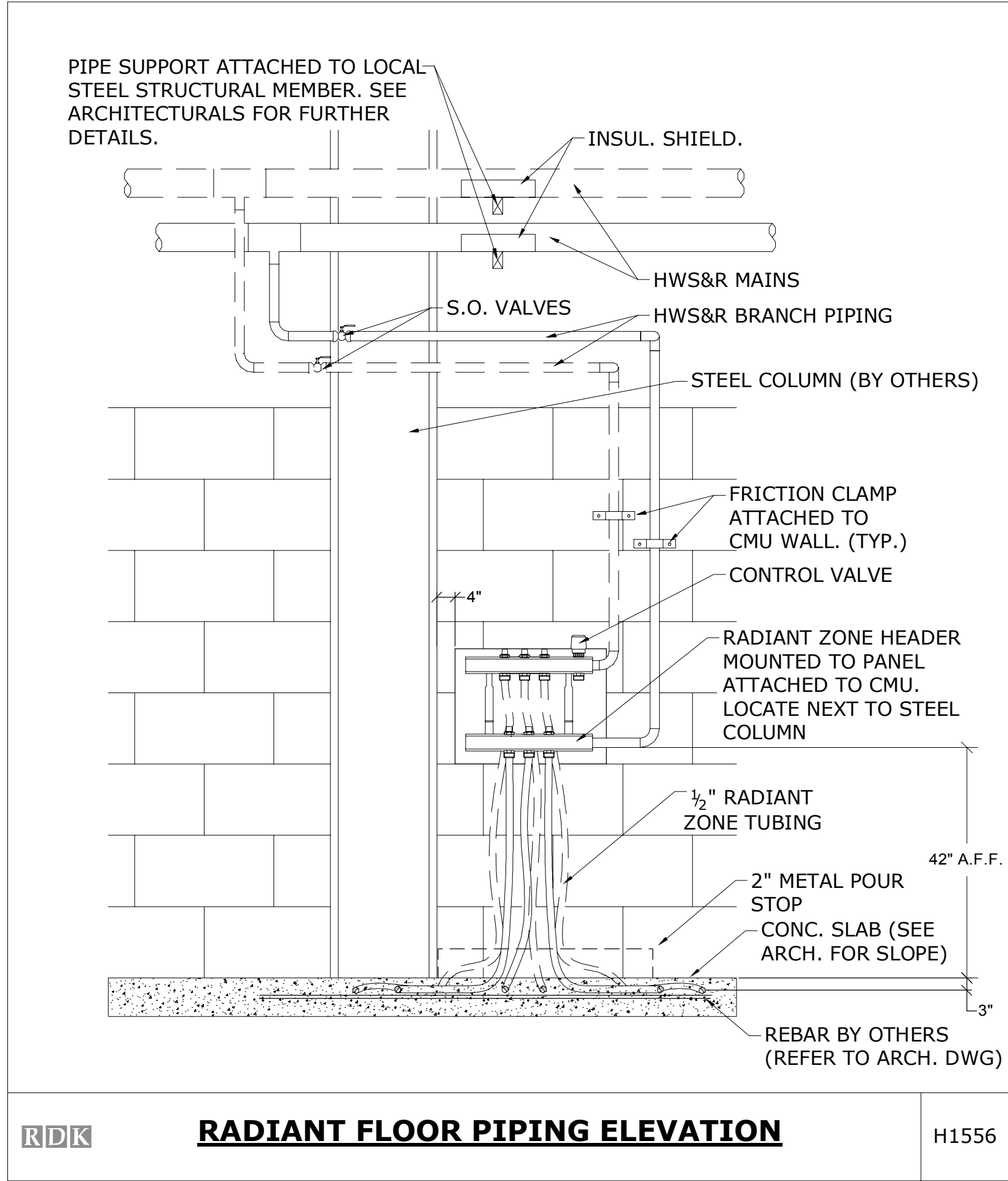
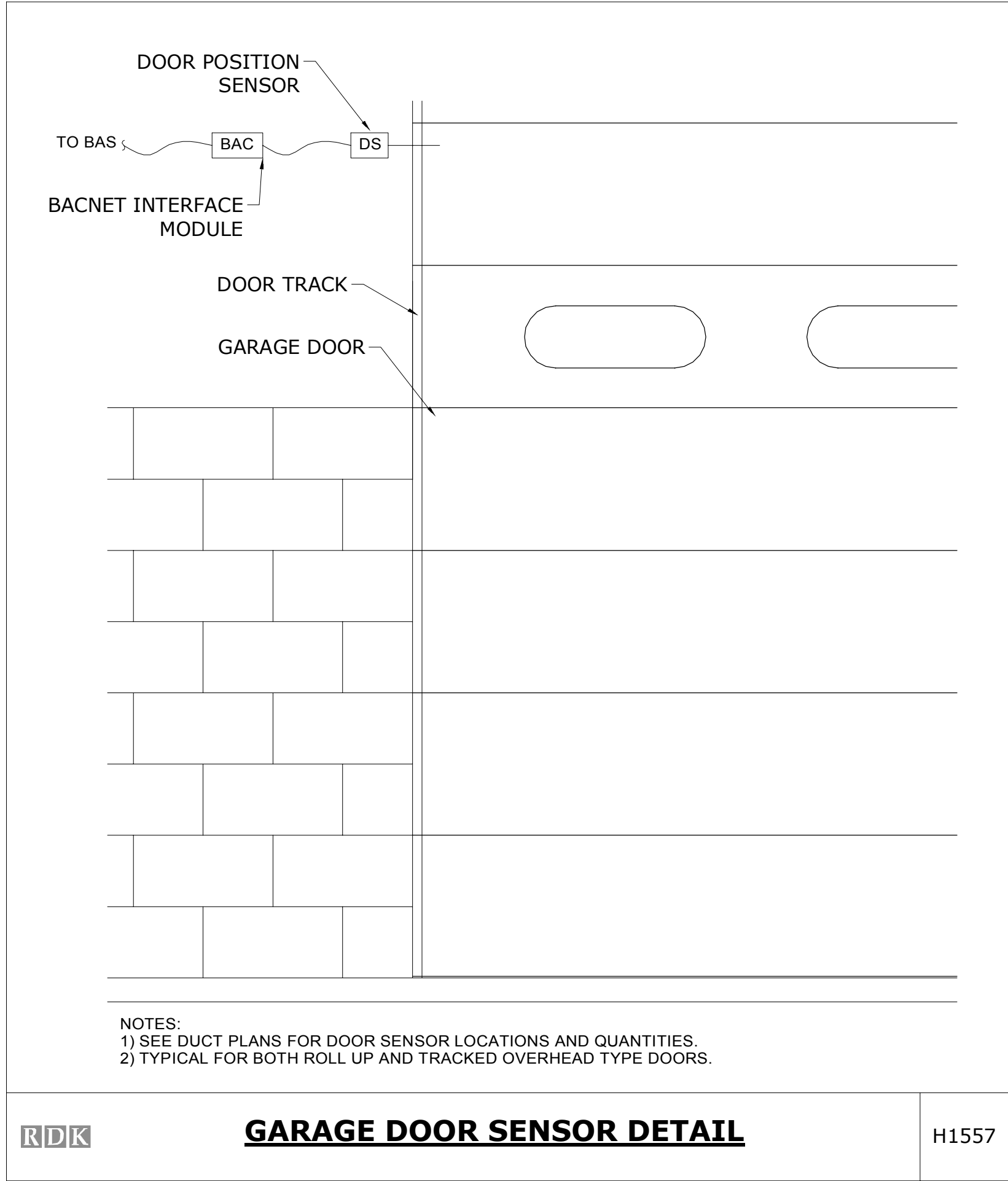


RDK

**TRANSFER BOOT W/ GRILLES**

H1505







EXHAUST FAN SCHEDULE																	
TAG	SERVICE	LOCATION	CFM	FAN TYPE	E.S.P. (IN.WG)	WHEEL			OUTLET VELOCITY (FPM)	MOTOR					WEIGHT (LBS)	MANUFACTURER AND MODEL NUMBER (AS STANDARD)	REMARKS
						DIA. (IN.)	TYPE	DRIVE		RPM	BHP	HP	V	PH			
EF-1A,B,C,D	ERU-1,2,3,4	ROOF	11,250	HIGH PLUME	5	-		BELT	4000	1725	16.08	25	208	3	10,880	GREENHECK VEKTOR-MD-27-2-85	1,2,3,4,5
EF-2	WASH BAY	ROOF	6,000	CENT UPBLAST	.5	-		BELT	-	866	1.61	2	208	3	150	GREENHECK CUBE-220-20	1,2,3,4,5
EF-3	MECHANICAL RM	ROOF	3,000	CENT DNBLAST	.5	-		BELT	-	1725	.73	.75	208	3	80	GREENHECK CUBE-161-7	1,2,3,4,5
EF-4	PAINT EQUIP RM	ROOF	3,500	INLINE	1	-		DIRECT	-	1725	1.84	2	208	3	164	GREENHECK SQ-160-A	1,2,3,4,5
EF-5	SPRINKLER ROOM	ROOF	3,000	CENT DNBLAST	.5	-		BELT	-	1725	.73	.75	208	3	80	GREENHECK CUBE-161-7	1,2,3,4,5
VF-1	REPAIR BAY	ROOF	17,000	CENT UPBLAST	.75	-		BELT	-	1725	4.3	5	208	3	363	GREENHECK CUBE-420-50	1,2,3,4,5
VF-2	REPAIR BAY	ROOF	17,000	CENT UPBLAST	.75	-		BELT	-	1725	4.3	5	208	3	363	GREENHECK CUBE-420-50	1,2,3,4,5
VF-3	WELD SHOP	ROOF	3,500	CENT UPBLAST	.5	-		BELT	-	1725	0.7	.75	208	3	103	GREENHECK CUBE-180-7	1,2,3,4,5
VF-4	AERIAL BUCKET	ROOF	4,000	CENT UPBLAST	.5	-		BELT	-	1725	0.9	1	208	3	117	GREENHECK CUBE-200-10	1,2,3,4,5
VF-5	STORES STOCKROOM	ROOF	8,000	CENT UPBLAST	.5	-		BELT	-	1725	1.2	1.5	208	3	194	GREENHECK CUBE-300-15	1,2,3,4,5
VF-6	STORES STOCKROOM	ROOF	8,000	CENT UPBLAST	.5	-		BELT	-	1725	1.2	1.5	208	3	194	GREENHECK CUBE-300-15	1,2,3,4,5
VF-7	LUBE/COMPRESSOR	ROOF	2,000	CENT UPBLAST	.5	-		BELT	-	1725	0.46	.5	208	3	77	GREENHECK CUBE-141-5	1,2,3,4,5
VF-8	LUBE BAYS	ROOF	4,500	CENT UPBLAST	.5	-		BELT	-	1725	1.15	1.5	208	3	122	GREENHECK CUBE-200-15	1,2,3,4,5
VF-9	WELD/FABRICATION SHOP	ROOF	7,500	CENT UPBLAST	.5	-		BELT	-	1725	0.7	2	208	3	184	GREENHECK CUBE 240-20	1,2,3,4,5
VF-10	MACHINE SHOP	ROOF	7,500	CENT UPBLAST	.5	-		BELT	-	1725	0.7	2	208	3	184	GREENHECK CUBE 240-20	1,2,3,4,5
VF-11	MACHINE SHOP	ROOF	7,500	CENT UPBLAST	.5	-		BELT	-	1725	0.7	2	208	3	184	GREENHECK CUBE 240-20	1,2,3,4,5
VF-12	CNG INSPECTION	ROOF	6,000	CENT UPBLAST	.5	-		BELT	-	1725	1.3	1.5	208	3	143	GREENHECK CUBE 240-15	1,2,3,4,5
VF-13	PARTS WASHER	ROOF	900	CENT UPBLAST	.5	-		BELT	-	1725	0.18	0.25	208	3	56	GREENHECK CUBE 101-4	1,2,3,4,5
VF-14	PAINT EQUIP. RM	ROOF	600	CENT UPBLAST	.5	-		BELT	-	1725	0.18	0.25	208	3	56	GREENHECK CUBE-101HP-4	1,2,3,4,5
VF-15	PAINT BOOTH HALL	ROOF	2,000	CENT UPBLAST	.5	-		BELT	-	1725	0.46	.5	208	3	77	GREENHECK CUBE-141-5	1,2,3,4,5
TE-1	MENS RM, WOMENS RM, JANITOR CLOSET	ROOF	2,000	CENT DNBLAST	1	-		BELT	-	1725	.59	.75	208	3	62	GREENHECK G-133-A	1,2,3,4,5
VES-1 THRU 10	VARIES	IN-ROOM	1,400	UTILITY SET	5	-		BELT	-	3600	3.0	2.12	208	3	159	GREENHECK BISW	1,2,3,4,5
EHF-1 THRU 4	VARIES	IN-ROOM	600	UTILITY SET	4	-		BELT	-	3600	-	1.5	208	3	158	GREENHECK BISW	1,2,3,4,5
NOTES: 1 PROVIDE WITH FACTORY ROOF CURB 2 PROVIDE WITH BACKDRAFT DAMPER 3 PROVIDE NEMA-3R RATED DISCONNECT SWITCH. 4 PROVIDE WITH BMS START/STOP AND SCHEDULING. 5 PROVIDE WITH VFD																	

DUCTLESS SPLIT AIR-CONDITIONING UNIT SCHEDULE																			
TAG	LOCATION	INDOOR UNIT				REFRIGERANT	OUTDOOR CONDENSING UNIT											REMARKS	
		CFM	MANUFACTURER AND MODEL NUMBER (INDOOR UNIT)	CAPACITY(MBH)		TYPE	MANUFACTURER AND MODEL NUMBER (OUTDOOR UNIT)	TAG	LOCATION	SOUND PRESSURE DB(A)	DESIGN AMBIENT TEMP (°F)	MINIMUM AMBIENT TEMP (°F)	ELECTRIC (OUTDOOR)				EFFICIENCY (SEER)		
				BTU'S/HR	COND. (GPM)								MCA	HZ	V	PH			
AC-1	ELEC. RM.	1,025	MITSUBISHI PCA	24,000	0.02	R410A	PUY-A24NHA4	ACCU-1	ROOF	48	95°	0°	18	60	208	1	16.8	1 THRU 8	
AC-2	COMM RM	670	MITSUBISHI PCA	42,000	0.03	R410A	PUYA42NHA4	ACCU-2	ROOF	51	95°	0°	26	60	208	1	15.8	1 THRU 8	
NOTES: 1 REFER TO SPECIFICATIONS, DETAILS, AND CONTROL DRAWINGS FOR ADDITIONAL INFORMATION. 2 SEE DRAWINGS FOR UNIT QUALITIES. 3 PROVIDE 1-1/4" CONDENSATE DRAIN TO LOCAL FLOOR DRAIN. 4 PROVIDE REFRIGERANT PIPING BETWEEN INDOOR AND OUTDOOR UNITS SIZED AS PER MANUFACTURERS RECOMMENDATIONS FOR LENGTH OF RUN. 5 PROVIDE FIELD SUPPLIED INTERCONNECTED POWER WIRING FROM OUTDOOR UNIT TO INDOOR UNIT. 6 PROVIDE WITH ROOM MOUNTED T-STAT. 7 PROVIDE WITH DISCONNECT SWITCH. 8 PROVIDE WITH FACTORY WIND BAFFLE ACCESSORY INSTALLED.																			

CABINET UNIT HEATER (CUH) SCHEDULE (HOT WATER)																		
TAG	LOCATION	TYPE	OUTPUT MBH	AIR			MOTOR				WATER					MANUFACTURER AND MODEL NUMBER (AS STANDARD)	REMARKS	
				CFM	EAT (°F)	LAT (°F)	RPM	HP	ELECTRIC SERVICE			FLUID	GPM	EWT (°F)	LWT (°F)			P.D. (FT.)
									AMPS	V	PH							
CUH-1	VESTIBULE	FLOOR	29.8	609	45	90	1050	$\frac{1}{30}$	.27	208	3	H2O	2.55	140	110	0.3	TRANE FORCE-FLO	1 THRU 5
CUH-2	VESTIBULE	FLOOR	29.8	609	45	90	1050	$\frac{1}{30}$	.27	208	3	H2O	2.55	140	110	0.3	TRANE FORCE-FLO	1 THRU 5
NOTES: 1. REFER TO SPECIFICATIONS, DETAILS, AND CONTROL DRAWINGS FOR ADDITIONAL INFORMATION. 2. PROVIDE MINIMUM OF 20 GAUGE STEEL CASING PAINTED WITH A CORROSION RESISTANT, BAKED, POLYESTER POWDER COATED FINISH. 3. PROVIDE FULLY ADJUSTABLE AIR DEFLECTORS AND OSHA APPROVED FAN GUARD. 4. PROVIDE ALUMINUM FINS AND COPPER TUBE COILS. 5. PROVIDE FACTORY WALL MOUNTED THERMOSTAT.																		

WELD EXHAUST ARM (WEA) SCHEDULE								
TAG	LOCATION	AIR		DIMENSIONAL DATA			MANUFACTURER AND MODEL NUMBER (AS STANDARD)	REMARKS
		CFM	P.D. (IN W.G.)	DIAMETER	REACH			
WEA	VARIES	600	0	6"□	14'-0"	-	NEDERMAN NEX MD 4	1.2
NOTES: 1 REFER TO SPECIFICATIONS, DETAILS, AND CONTROL DRAWINGS FOR ADDITIONAL INFORMATION. 2 PURCHASE WITH MOUNTING BRACKET.								

ENERGY RECOVERY UNIT SCHEDULE																																		
TAG	LOCATION	OA CFM TOTAL	FAN DATA												HEATING COIL (HOT WATER)										ENERGY RECOVERY PLATE						WT (LBS)	MFR AND MODEL NO. (AS STANDARD)	REMARKS	
			CAPACITY CONTROL		STATIC PRESS. (IN. WG)		WHEEL		MOTOR						CAPACITY (MBH)	FACE VEL. (FPM)	AIR DATA			HOT WATER DATA				NO. OF COILS/ ROWS	FIN/ FT.	WINTER								
			RANGE (%)	TYPE	EXTERNAL	TOTAL W/ DIRTY FILTERS											OUTLET VEL. (FPM)	DIA. (IN.)	TYPE	RPM	BHP	HP	V			PH	EAT (°F)	LAT (°F)	P.D. (IN.WC)	GPM				EWT (°F)
							EAT	LAT	EAT	LAT																								
ERU-1	ROOF	17,500	100	VFD	1.5	2.5	2512	25	PLENUM	1447	15.99	20	208	3	704	499	42	80	0.15	47	140	110	2.75	2	87	804	0.87	0	42	70	29	8871	TRANE CLIMATE CHANGER CSAA035UA	1 THRU 8
ERU-2	ROOF	17,500	100	VFD	1.5	2.5	2512	25	PLENUM	1447	15.99	20	208	3	704	499	42	80	0.15	47	140	110	2.75	2	87	804	0.87	0	42	70	29	8871	TRANE CLIMATE CHANGER CSAA035UA	1 THRU 8
ERU-3	ROOF	4,200	100	VFD	1.5	2.5	2032	15	PLENUM	1798	2.7	3	208	3	168	418	42	80	0.11	11.2	140	110	0.75	2	86	192	0.26	0	42	70	29	3324	TRANE CLIMATE CHANGER CSAA010UA	1 THRU 8
ERU-4	ROOF	9,000	100	VFD	1.5	2.5	3121	18	PLENUM	2071	7.9	10	208	3	369	432	42	80	0.12	24.5	140	110	1.41	2	84	453	0.6	0	42	70	29	5248	TRANE CLIMATE CHANGER CSAA021UA	1 THRU 8
NOTES: 1 REFER TO SPECIFICATIONS, AND DETAILS FOR ADDITIONAL INFORMATION. 2 UNITS TO BE DOUBLE WALLED WITH INSUL. PROVIDE INSULATED DOUBLE WALL ACCESS DOORS (WITH MULT-IPOINT DOOR LATCH AND VISION PANELS) FOR EACH SECTION. OUTDOOR AIR DAMPERS SHALL BE INSULATED ULTRA LOW LEAKAGE DAMPERS WITH BLADE SEALS. SUPPLY AIR FAN ASSEMBLY TO BE PROVIDED WITH INTERNAL VIBRATION ISOLATORS (WITH 2" INCH DEFLECTION SPRING ISOLATORS). 3 PROVIDE ALL UNITS WITH FACTORY VFD AND PREMIUM EFFICIENCY VFD COMPATIBLE MOTORS. 4 PROVIDE STAINLESS STEEL DRAIN PAN THAT EXTENDS 10" BEYOND FACE OF COIL. 5 PROVIDE DISCHARGE PLENUM SECTION. 6 PROVIDE FACTORY DISCONNECT SWITCH AND SINGLE POINT POWER. 7 M.C. TO VERIFY LOCATION OF COIL CONNECTION, ACCESS DOORS, FILTER PULL, MOTOR ACCESS, ETC. PRIOR TO ORDERING UNITS. REFER TO PLANS. 8 PROVIDE WITH FACTORY MOUNTED CONTROLS.																																		

PUMP SCHEDULE																
TAG	SERVICE	LOCATION	CASING TYPE	FLUID		GPM	NPSHR (FT.)	HEAD (FT.)	SHUT-OFF HEAD (FT.)	IMPELLER SIZE (IN.)	MOTOR				MANUFACTURER AND MODEL NUMBER (AS STANDARD)	REMARKS
				TYPE	TEMP (°F)						RPM	HP	V	PH		
HWP-1	ENERGY RECOVERY UNITS	MECH RM	CAST IRON	H2O	140	150	90	70	-	9.25	1760	5	208	3	TACO KS-2009	1,2
HWP-2	UHS	MECH RM	CAST IRON	H2O	140	450	130	90	-	11.25	1760	20	208	3	TACO KS-4011	1,2
HWP-3	RADIANT FLOORING	MECH RM	CAST IRON	H2O	107	110	130	115	-	11.25	1760	10	208	3	TACO KS-2011	1,2
HWP-4	SPARE	MECH RM	CAST IRON	H2O	140	450	130	115	-	11.25	1760	20	208	3	TACO KS-4011	1,2
HWP-5	FIN TUBE RADIATION & CUHS	MECH RM	CAST IRON	H2O	140	100	105	60	-	8.75	1760	5	208	3	TACO KS-1509	1,2
HWP-6	IN-DUCT HEATING COIL	MECH RM	CAST IRON	H2O	140	35	45	30	-	5.75	1760	$\frac{3}{4}$	208	3	TACO KS-1506	1,2
NOTES: 1 REFER TO SPECIFICATIONS, AND DETAILS FOR ADDITIONAL INFORMATION. 2 PROVIDE WITH SUCTION DIFFUSER (ONLY IF REQUIRED STRAIGHT LENGTHS UNACHIEVABLE), TRIPLE DUTY VALVE, FLEX CONNECTORS, STRAINERS, GAUGES AND ISOLATION VALVES.																



TAG	SERVICE	LOCATION	CFM		DX COOLING COIL																	MANUFACTURER AND MODEL NUMBER (AS STANDARD)	REMARKS				
			TOTAL	MIN. O.A.	STATIC PRESS. (IN. WG)		MOTOR								CAPACITY (MBH)		FACE VELOCITY (FPM)	REFRIG-ERANT TYPE	AIR DATA					ROWS	FINS PER FT.		
					EXTERNAL	TOTAL W/ DIRTY FILTERS	RPM	BHP	BHP/ 1000 CFM	HP	V	PH	MOP	MCA	TOTAL	SENS.			EAT (°F)		LAT (°F)					P.D. (IN.W.G)	
																			DB	WB	DB						WB
RTU-1	OFFICES	ROOF	7,200	750	1.75	2.5	884	6.22	863.89	7.5	208	3	125	112	251	182	230	R-410A	80	67	59.6	56.7	0.3	4	180	TRANE THD240 SERIES	1 THRU 6

DIFFUSER AND GRILLE SCHEDULE									
TAG	SELECTION RANGE (CFM)	NECK SIZE (IN.)	OVERALL SIZE (IN.)	SERVICE	MOUNTING	TYPE	NOTES	MANUFACTURER AND MODEL NUMBER (AS STANDARD)	REMARKS
SA	0-150	8"□	22x22	SUPPLY	CEILING	LAY-IN OR SURFACE	-	TITUS TMS	1 THRU 8
SB	0-285	12"□	22x22	SUPPLY	CEILING	LAY-IN OR SURFACE	-	TITUS TMS	1 THRU 7
SC	0-250	15"□	22x22	SUPPLY	CEILING	LAY-IN OR SURFACE	-	TITUS TMS	1 THRU 8
SD	0-360	14"□	22x22	SUPPLY	CEILING	LAY-IN OR SURFACE	-	TITUS TMS	1 THRU 7
SE	0-500	15"□	22x22	SUPPLY	CEILING	LAY-IN OR SURFACE	-	TITUS TMS	1 THRU 7
SF	0-500	12"□	22x22	SUPPLY	CEILING	LAY-IN OR SURFACE	-	TITUS TMS	1 THRU 7
SG	0-1700	24"x22"	25 $\frac{3}{4}$ "x23 $\frac{3}{4}$ "	SUPPLY	DUCT	SIDEWALL GRILLE	DOUBLE DEFLECTION	TITUS 300FL	1,4,7
SH	0-800	18"x18"	19 $\frac{3}{4}$ "x19 $\frac{3}{4}$ "	SUPPLY	DUCT	SIDEWALL GRILLE	DOUBLE DEFLECTION	TITUS 300FL	1,4,7
SI	0-700	18"x14"	19 $\frac{3}{4}$ "x15 $\frac{3}{4}$ "	SUPPLY	DUCT	SIDEWALL GRILLE	DOUBLE DEFLECTION	TITUS 300FL	1,4,7
SJ	0-500	14"x14"	15 $\frac{3}{4}$ "x15 $\frac{3}{4}$ "	SUPPLY	DUCT	SIDEWALL GRILLE	DOUBLE DEFLECTION	TITUS 300FL	1,4,7
SK	0-3350	22"x46"	24"x48"	SUPPLY	DUCT	SIDEWALL GRILLE	DOUBLE DEFLECTION	TITUS 300FL	1,4,7
EG	0-1700	24"x24"	24"x24"	RETURN	CEILING	LAY-IN OR SURFACE	-	TITUS 23RS	1,3,4,5,7,8
EH	0-800	18"x18"	19 $\frac{3}{4}$ "x19 $\frac{3}{4}$ "	EXHAUST	DUCT	SIDEWALL GRILLE	-	TITUS 350FL	1,4,7
EI	0-700	18"x14"	19 $\frac{3}{4}$ "x15 $\frac{3}{4}$ "	EXHAUST	DUCT	SIDEWALL GRILLE	-	TITUS 350FL	1,4,7
EJ	0-500	14"x14"	15 $\frac{3}{4}$ "x15 $\frac{3}{4}$ "	EXHAUST	DUCT	SIDEWALL GRILLE	-	TITUS 350FL	1,4,7
EK	0-3350	22"x46"	24"x48"	EXHAUST	DUCT	SIDEWALL GRILLE	-	TITUS 350FL	1,4,7

MINIMUM DUCT INSULATION R-VALUES (IECC - 2012)					
LOCATION	SUPPLY	RETURN	RAW OUTDOOR AIR	EXHAUST	
				WITH ENERGY RECOVERY	WITHOUT ENERGY RECOVERY
ATTIC TYPE SPACE (EXPOSED ROOF ABOVE)	R-8	R-8	R-4	R-8	R-8*
OUTDOORS	R-8	R-8	-0-	R-8	R-8*
CRAWL SPACE	R-6	R-6	R-6	R-6	-0-
UNCONDITIONED SPACE (SHAFT OR CEILING WITH DUCTED RETURN AIR)	R-6	R-6	R-6	R-6	-0-
RETURN AIR PLENUM	R-4	-0-	R-4	-0-	-0-
EXPOSED IN MECHANICAL ROOM	R-6	R-6	R-6	R-6	-0-
EXPOSED IN ZONE SERVED(**ONLY DUCTS THAT PROVIDE COOLING)	R-4**	-0-	R-4	-0-	-0-

HOT WATER HEATING COIL SCHEDULE															(GPM)	
TAG	CFM	OUTPUT (MBH)	SIZE (IN.)		FACE VELOCITY (FPM)	ROWS	FINS PER FOOT	AIR DATA			WATER DATA			MANUFACTURER AND MODEL NUMBER (AS STANDARD)	REMARKS	
			W	H				EAT (°F)	LAT (°F)	P.D. (IN.WG)	GPM	EWI (°F)	LWT (°F)			P.D. (FT.)
HC-1	7200	273.29	70	21	705	2	149	55	90	0.35	18.26	140	110	1.29	TRANE HTCL D5WB21	1,2
NOTES:																
1 REFER TO SPECIFICATIONS, DETAILS, AND CONTROL DRAWINGS FOR ADDITIONAL INFORMATION.																
2 PROVIDE WITH PRESSURE INDEPENDENT CONTROL VALVE.																

NOTES:  
1 REFER TO SPECIFICATIONS AND DETAILS FOR ADDITIONAL INFORMATION.

MINIMUM INSULATION THICKNESS IN INCHES FOR INDOOR PIPE SIZES (SEE NOTES BELOW)							
PIPING SYSTEM TYPES	FLUID TEMP. RANGE (°F)	< 1"	1" TO 1½"	1½" TO 3"	4" TO 6"	8" AND UP	K-FACTOR (BTU-INCH²/F-HR-SF) AT AVE. TEMP. (°F)
LOW TEMPERATURE HEATING	141 TO 200	1.5	1.5	2	2	2	0.25-0.28 @ 125°F
CONDENSING BOILERS	105 TO 140	1	1	1.5	1.5	1.5	0.22-0.28 @ 100°F

NOTES:

1. FOR MINIMUM THICKNESS OF ALTERNATIVE INSULATION TYPES OUTSIDE THE STATED CONDUCTIVITY RANGE, SEE TEST METHOD FOR STEADY STATE HEAT TRANSFER PROPERTIES OF HORIZONTAL PIPE INSULATIONS, ASTM C 335-95, AND THE STATE ENERGY CODE.
2. FOR OUTDOOR STEAM, HEATING WATER PIPING, ADD 50% TO THICKNESS LISTED.
3. REFER TO SPECIFICATIONS AND DETAILS FOR ADDITIONAL INFORMATION.

TAG	LOCATION	DIMENSIONS			MOUNTING	FREE AREA (SQFT)	MANUFACTURER AND MODEL NUMBER (AS STANDARD)	REMARKS
		W	H	D				
LV-1	MECH ROOM	24"	24"	34.75"	ROOF	11.14	GREENHECK WRH	1,2,3
LV-2	SPRINKLER ROOM	24"	24"	34.75"	ROOF	11.14	GREENHECK WRH	1,2,3
LV-3	PARTS WASHER	24"	24"	34.75"	ROOF	11.14	GREENHECK WRH	1,2,3
LV-4	PAINT BOOTH HALL	48"	48"	6"	WALL	8.32	GREENHECK EDJ-601 SERIES	1,2,3
LV-5	PAINT STORAGE	36"	36"	34.75"	ROOF	15.86	GREENHECK WRH	1,2,3
LV-6	PAINT STORAGE	18"	18"	12.25	ROOF	3.19	GREENHECK WRH	1,2,3
LV-7	VARIABLE	24"	24"	6"	WALL	1.84	GREENHECK EDJ-601 SERIES	1,3
LV-8	MEZZ LOUVER	102"	120"	6"	WALL	50.14	GREENHECK EDJ-601 SERIES	1,3
LV-9	MEZZ LOUVER	108"	120"	6"	WALL	54.31	GREENHECK EDJ-601 SERIES	1,3
LV-10	PAINT MECH PLAT.	166"	75"	6"	WALL	49.53	GREENHECK EDJ-601 SERIES	1,3

TERMINAL VOLUME BOX SCHEDULE										
TAG	TYPE	SELECTION RANGE (CFM)	INLET SIZE (IN.)	DISCHARGE SIZE (IN.)		MAX. S.P. DROP W/ COIL (IN.WG)	NC RATING		MANUFACTURER AND MODEL NUMBER (AS STANDARD)	REMARKS
				W	H		RAGD	DISCH		
VAV-6	SINGLE DUCT	60-500	6	11.5	9.5	0.11	23	20	TRANE VCW SERIES	1 THRU 3
VAV-8	SINGLE DUCT	105-900	8	12.5	11.5	0.10	23	16	TRANE VCW SERIES	1 THRU 3
VAV-10	SINGLE DUCT	165-1400	10	15.5	13.5	0.25	22	23	TRANE VCW SERIES	1 THRU 3
VAV-12	SINGLE DUCT	240-2000	12	19.5	15.5	0.5	23	27	TRANE VCW SERIES	1 THRU 3

			THE INFORMATION, INCLUDING ESTIMATED QUANTITIES OF WORK, SHOWN ON THESE SHEETS IS BASED ON LIMITED INVESTIGATIONS BY THE STATE AND IS IN NO WAY WARRANTED TO INDICATE THE CONDITIONS OF ACTUAL QUANTITIES OF WORK WHICH WILL BE REQUIRED.	DESIGNER/DRAFTER <b>WJS</b>
				CHECKED BY: <b>TFC</b>
				SCALE  1/8" = 1'-0"
NO.	Revision Description	Date		Plotted: 10/21/2014 3:32:11 PM

